

GOVERNING RELATIONS BETWEEN KOREAN ONSETS

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Abstract: The notion of inter-onset government together with proper government determines the interpretation of domain-internal empty nuclei in Korean. Properly governable empty nuclei are phonetically realised when the potential governor is not able to govern the potential governee. Governing hierarchy is determined based on Headship and the Complexity Condition. Korean has a peculiar property in terms of inter-onset government between headless expressions. Concretely, if an onset in the governed position dominates the element H, it must be governed by an onset which contains the element H as head.

Keywords: ɨ/zero alternation, government, proper government, inter-onset government, ECP, complexity, headship, p-licensed, licensing, realisation

1. INTRODUCTION

This paper concerns governing relations established between two onsets across a licensed empty nucleus. Inter-onset government has already been recognised as a mechanism which provides an account for certain phonological phenomena in many languages (e.g. Gibb (1992) for Finnish, Gussmann and Kaye (1993) for Polish, Frost (1995) for Luganda). The discussion in this paper is based on the revised theory of Government Phonology (henceforth, GP). See Kaye, et al. (1990) for a basic idea of GP. In particular, for the revision of the theory, refer to Charette and Kaye (1994). Let us start with ɨ/zero alternation.

This paper is structured as follows: in 2, we discuss ɨ/zero alternation. We discuss the notion of proper government (2.1) and inter-onset government (2.2), and consider how they interact in Korean Phonology. In 3, we present our analysis. In 3.1, we discuss the governing properties of segmental expressions. We then consider inter-onset governing relations in detail

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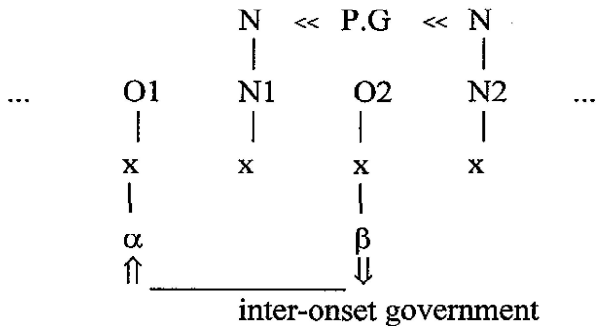
by dividing these into four cases; when the governor is a liquid (3.2), a headed expresion (3.3), a nasal (3.4) and a neutral obstruent (3.5). We present summary and conclusion in the final section.

2. ɨ / ZERO ALTERNATION

In Korean the vowel ɨ alternates with zero. Therefore, it has been treated as ɨ-deletion in many previous treatments (e.g. Kim-Renaud, 1975; Ahn, 1985; Sohn, 1987). In GP, however, it is claimed that ɨ/zero alternation is neither a deletion nor an insertion but a manifestation of the phonological empty category principle (ECP), as we will see shortly. For a general view about vowel/zero alternations, refer to (Charette, 1988 and 1991; Harris, 1990; Kaye, et al., 1990; Kaye, 1990). For Korean, see (Heo, 1994; Rhee, in preparation).

According to Heo (1994) and Rhee (in preparation), the following configuration shows the licensing of domain-internal empty nuclei in Korean: (Note that this exactly parallels the proposal made by Frost (1995) for Luganda.)

(1) Licensing of domain-internal empty nuclei



N1 is licensed when the two following conditions are satisfied;

(i) it must be properly governed (P.G) by the following nucleus N2
(ii) O2 governs O1

The nucleus N1 is licensed to be uninterpreted, if and only if it is properly governed by the following nucleus N2, and inter-onset government between O1 (governee) and O2 (governor) is satisfied. It either of these conditions fails, the internal empty nucleus must be interpreted. In this case, the unlicensed empty nucleus is realised as ɨ. In this section, we consider how the proposal (1) works in the revised theory of elements. We start the discussion with the notion of proper government.

2.1 Proper Government

In GP, it is claimed that empty nuclei are always present in lexical representations, and that their phonetic interpretation is determined by the ECP and proper government, which is given in (2)below:

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(2) Empty Category Principle;

i. The phonological ECP (Kaye, 1993:94): A p-licensed (empty) category receives no phonetic interpretation.

ii. P-licensing;

(a) Domain-final (empty) categories are p-licensed (parameterised).
(b) Properly governed (empty) nuclei are p-licensed.
(c) A nucleus within an inter-onset domain.

(3) Proper Government (Kaye, 1993: 94)
α properly governs β if

i. α and β are adjacent on the relevant projection,
ii. α is not itself licensed, and
iii. No governing domain separates α and β.

A domain-final empty nucleus is p-licensed in Korean by the parameter setting, while the interpretation of a domain internal empty nucleus is dependent on whether the position is properly governed or not. The phonological ECP states that a p-licensed empty nucleus receives no phonetic interpretation, i.e. is inaudible. According to proper government, a word-internal empty nucleus may not be phonetically realised when it is adjacent to another nucleus which is not itself licensed. If proper government fails, the word-internal empty nucleus must be phonetically manifested.

For instance, all penultimate empty nuclei are interpreted, when the following domain-final nucleus is empty. This is seen in the data given in (4) below:

(4)	stem	realisation	gloss.
	sasømø	sasɨm	'deer'
	isørø	isɨl	'dew'
	kasømø	kasɨm	'breast'
	sasørø	sasɨl	'chain'
	katøkø	katɨk	'full'
	yərømø	yərɨm	'summer'
	kusørø	kusɨl	'pearl'
	mɛtøpø	mɛtɨp	'knot'
	məsømø	məsɨm	'servant'
	curømø	curɨm	'wrinkle'

The interpretation of the penultimate empty nuclei is accounted for as follows. The final empty nucleus is p-licensed, therefore it cannot p-license the preceding nucleus, which must be realised. The word *sasømø* 'deer' is taken as an example to illustrate this fact:

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(5) *sasømø* sasim 'deer'

a.

O	N1	O	N2	O	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	
s	a	s		m	

N // P.G <<<< N

b.

O	N1	O	N2	O	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|	⇓	|	
s	a	s	[i]	m	

(5a) is the lexical representation of *sasømø*. Note that there are two successive empty nuclei. In (5b), the empty nucleus N3 is p-licensed by virtue of its domain-final position. N2 is not domain-final and thus cannot be p-licensed in the same way as N3. However, the potential proper governor of N2, i.e. N3 is itself licensed, which means that the conditions for proper government are not satisfied. Therefore, N2 is not p-licensed and must receive phonetic interpretation according to the ECP. As a result, the unlicensed empty nucleus N2 is realised as i.

The notion of proper government also provides a good explanation why penultimate empty nuclei get no phonetic interpretation, when the final nucleus is filled. Relevant examples are given in (6) below:

(6)

stem	realisation	gloss.
s'ərømɛ	s'əlmɛ	'sleigh'
yərømɛ	yəlmɛ	'fruit'
t'arøki	t'alki	'strawberry'
karøpi	kalpi	'spare ribs'
sərøma	səlma	'perhaps'
parøc^{h}i	palc^{h}i	'direction of one's feet'
canøc^{h}i	canc^{h}i	'feast'
yamøc^{h}i	yamc^{h}i	'selfish'
maŋøc^{h}i	maŋc^{h}i	'hammer'
toŋøki	toŋmu	'friend'
caŋøk'i	caŋk'i	'cock-pheasant'

It is seen that penultimate empty nuclei are not interpreted when the following nucleus is filled. In this case, unlicensed nuclei play a role as proper governor. Take the form *s'ərømɛ* as an instance. The derivation is given in (7) below:

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(7) *s'ərømɛ* s'əlmɛ 'sleigh'

a.

O	N1	O	N2	O	N3
x	x	x	x	x	x
s'	ə	r		m	ɛ

N << P.G << N

b.

O	N1	O	N2	O	N3
x	x	x	x	x	x
s'	ə	r		m	ɛ

(7a) represents the lexical structure of *s'ərømɛ*. It is seen that the penultimate nucleus N2 is empty and is followed by a filled nucleus. As seen in (7b), N3 is not itself licensed. It is adjacent to N2 on the nuclear projection. All the conditions for proper government are satisfied and thus N2 is p-licensed by proper government, hence inaudible. Note that the notion of proper government predicts the impossibility of forms like *s'ərimɛ or *toŋimu which is correct.

We have so far seen that proper government is a mechanism which controls the interpretation of empty nuclei. However, there are many examples in which an empty nucleus has a potential proper governor, but is nevertheless interpreted. This is explained by the notion of inter-onset government, which is discussed in the following section.

2.2 Inter-onset government

Let us consider the data given in (8) below:

(8)

stem	realisation	gloss.
myənøri	myəniri	'daughter-in law'
tasøri	tasiri	'to rule'
kørəmøro	kirəmiro	'therefore'
umøc^{h}øri	umc^{h}iri	'to shrink up'
omøri	omiri	'to fold'
k'aŋøgøri	k'aŋgiri	'all'
kotøre	kotire	'warp weights'
oŋk^{h}øri	oŋk^{h}iri	'to crouch'
c^{h} usøri	c^{h} usiri	'to care'

Note that although there is a potential proper governor for the penultimate empty nuclei, they are realised. This is illustrated in the following configuration given in (9) below:

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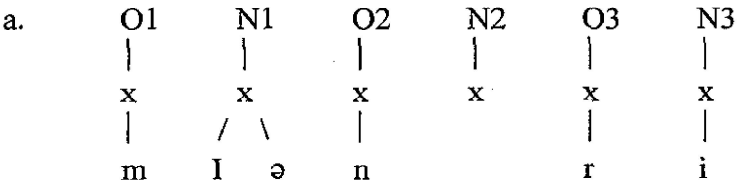
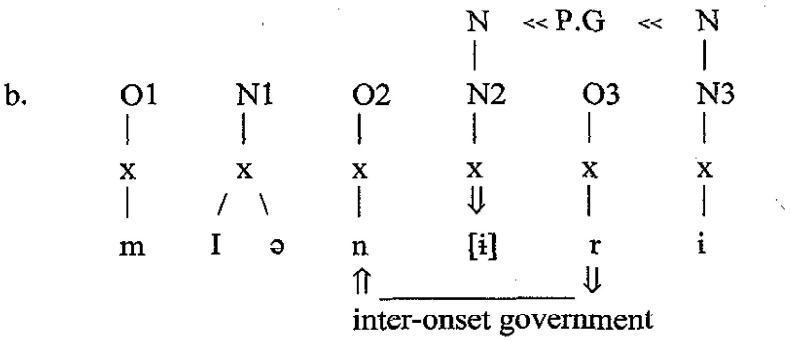
(9) *myənøri* myəniri 'daughter-in law'

a.



b.



(9a) represents the lexical structure of *myənøri*. The empty nucleus N2 is followed by a nucleus, which is not itself licensed. We might expect that N2 will not be phonetically realised, since there is a potential proper governor, i.e. N3, like the examples in (6). However, as seen in (9b), N2 receives phonetic interpretation, which indicates that there must be something else affecting the interpretation of domain-internal empty nuclei in Korean besides proper government.

Compare the configurations in (7) and (9) above. Note that in both examples the empty nucleus is properly governed by the following unlicensed nucleus. However, in (7), a liquid is followed by an empty nucleus and then a nasal follows, whereas the order of onsets is reversed in (9). Note that inter-onset government in Korean is a right to left affair, i.e. the governor is on the right and the governee is on the left. We therefore note that in (7) an inter-onset governing relation is satisfied, whereas it fails in (9). As a result, in (7), the empty nucleus N2 is p-licensed by satisfying the two conditions (i.e. proper government and inter-onset government) and thus is not interpreted. On the other hand, the empty nucleus N2 in (9) is not p-licensed because the inter-onset governing requirement is not satisfied and thus it receives phonetic interpretation.

We have so far seen how domain-internal empty nuclei are p-licensed by the notion of proper government combined with inter-onset government. In the following section, we present the analysis in the revised theory of elements. Before doing this, let us first consider the governing properties of segmental expressions.

3. THE ANALYSIS

3.1 The governing properties of segmental expressions

GP claims that governing properties are determined by the internal structures of the material associated to the skeletal points. For the internal structure of Korean onsets, refer to Kim (1996). It is assumed that headed expressions are superior to headless expressions in a

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governing relation. Therefore, we claim that headed expressions occur in governing positions, while headless expressions occur in governed positions. Consequently, in Korean, tense and aspirated expressions are headed and thus they are assumed to be potential governors.

However, it is also found that headless expressions govern other headless expressions. In this case, the governor must be no less complex than its governee. This is expressed in the Complexity Condition, which is presented in (10) below:

(10) Complexity Condition (Harris, 1990:274)

> Let α and β be segments occupying the positions A and B respectively. Then if A governs B, β must be no more complex than α.

The complexity of an expression can be calculated in terms of the number of elements of which an expression is composed. Therefore, it appears that liquids are more likely to be governees, whereas obstruents and nasals are more likely to be governors.

For Korean non-nuclear expressions, the governing hierarchy can be given based on Headship and the Complexity Condition as follows:

Table 1 Governing hierarchy of non-nuclear expressions of Korean

Expressions	Liquids	Nasals	Neutral obstruents	Tense/ Aspirated
Headship	h e a d l e s s			headed
No. of elements	1	2 ~ 3	2 ~ 3	
Governing potential	<--------- better governee		better governor	------->

In the following sections, we consider inter-onset governing relations in more detail, focusing on the cases where the failure of inter-onset government blocks proper government. We start with the case where a liquid acts a governor.

3.2 When the governor is a liquid

In the case where a properly governable empty nucleus is followed by a liquid, and is preceded by another consonant, the empty nucleus is always interpreted, except when the two flanking consonants are identical. Since inter-onset government in Korean is a right to left affair, as stated earlier, it can be predicted from the representation of onsets. In other words, the liquid r is the weakest one in the governing hierarchy of non-nuclear expressions and thus it cannot govern any other expression. Relevant examples are given in (11) below:

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(11) Empty nuclei before a liquid

a. liquid + ø + liquid + v

turørɛ	tullɛ	'surrounding'
pərørɛ	pəllɛ	'warm'
kərørɛ	kəllɛ	'dust clothes'
$k^hyərørɛ$	$k^hyəllɛ$	'pair (shoes)'
surørɛ	sullɛ	'seeker'
p'arørɛ	p'allɛ	'washing'
sərørɛ	səllɛ	'to be excited

b. nasal + ø + liquid + v

kənøri	kəniri	'to rule'
omøri	omiri	'to fold'
cinørəmi	cinirəmi	'fin'
myənøri	myəniri	'daughter-in law'
kørəmøro	kirəmiro	'therefore'

c. headless obstruent + ø + liquid + v

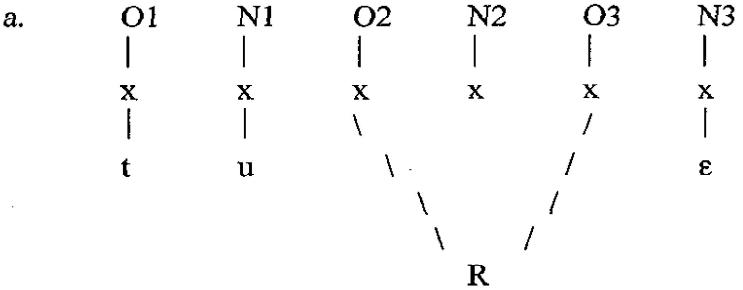
yətørømø	yətirim	'pimple'
ciŋøgørəpø	ciŋgirəp	'to be creepy'
kotørømø	kotirim	'icicle'
k'aŋøgøri	k'aŋgiri	'all'
tasøri	tasiri	'to rule'
$c^husøri$	c^husiri	'to care'
tutøri	tutiri	'to knock'

The examples in (11) show that a properly governable empty nucleus before a liquid is not p-licensed if the preceding onset is either a nasal or a headless obstruent. However, it is p-licensed, if the flanking onsets are identical.

Consider the cases (11a), where the empty nucleus is between two identical consonants. Recall that the complexity condition allows a governing relation between two onsets which contain the same number of elements. Accordingly, nothing prevents the intervening empty nucleus from being properly governed. As a result, it is not phonetically realised. This is shown in the following configurations given in (12) below:

(12) *turørɛ* tullɛ 'surrounding'

a.



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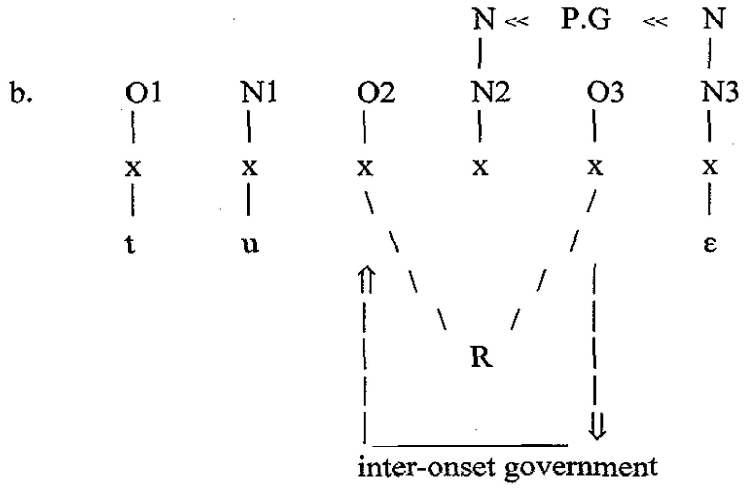
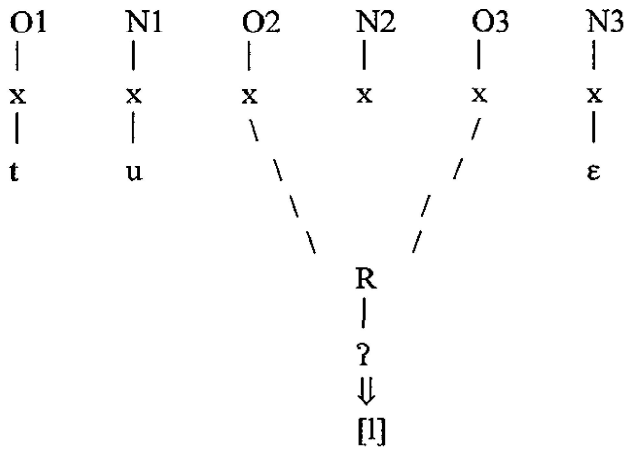


(12a) represents the lexical structure of *turøre*. N2 is licensed by the following nucleus N3. The inter-onset government is formed between the two flanking onsets by virtue of the Complexity Condition. As a result, N2 is not phonetically audible. However, what we have to note is the segmental change of r to [l]. In Korean r followed by a licensed empty nucleus is realised as [l], adding the element ʔ to its internal representation (For a more detailed discussion, see Heo, 1994). The second r also obtains the element ʔ deriving [l], so that inter-onset government is maintained. The following configuration shows this:

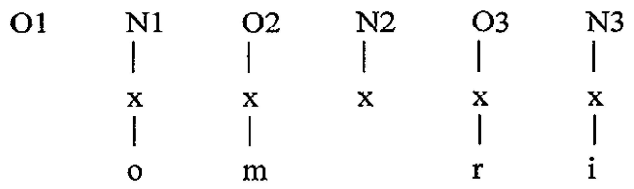
(13)



Let us consider the case where a properly governable empty nucleus fails to be licensed. Consider the data (11b) and (11c). It is seen that they have a potential proper governor to their right, but they receive phonetic interpretation. This is illustrated in the following configurations given in (14) below:

(14) *omøri* omiri 'to fold'

a.



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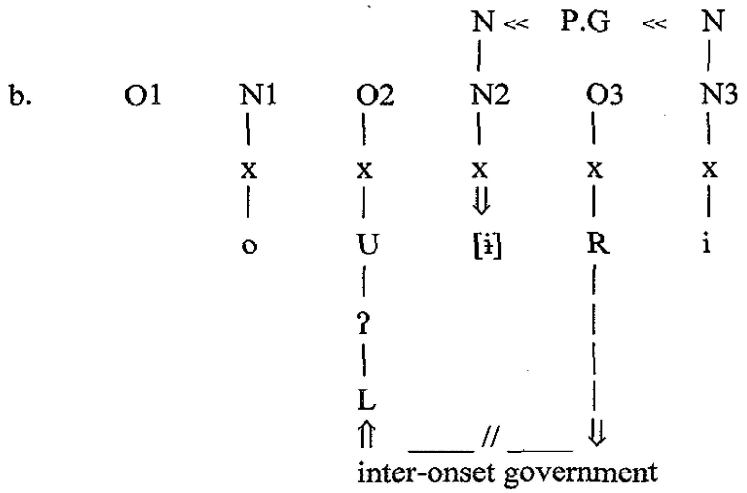
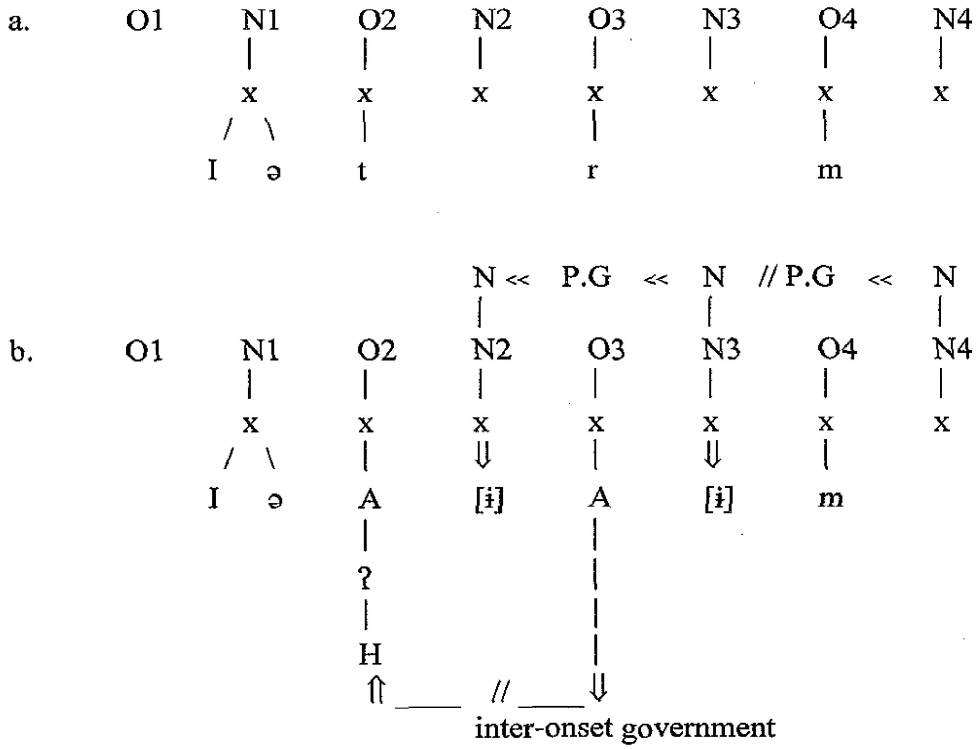


(14a) represents the lexical structure of *omøri*. Note that the empty nucleus has a potential proper governor, which is not itself licensed. It is adjacent to N2 on the nuclear projection. All the conditions for proper government are satisfied. However, what is important is the nature of the flanking onsets. As seen in (14b), r is not able to govern m. Therefore, although N2 is properly governed by the following nucleus, it is not p-licensed because of the failure of inter-onset government. As a result, it is realised as i.

Finally, the examples in (11c) can be explained in the same way as the examples in (11b). That is, they are also examples where a properly governable empty nucleus fails to be p-licensed. Take the form *yətørømø* 'pimple' as an instance. The derivation is presented in (15) below:

(15) *yətørømø* yətirim 'pimple'



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(15a) is the lexical representation of *yətørømø*. It is seen that there are two domain-internal empty nuclei with a domain-final empty nucleus. As seen in (15b), N4 is p-licensed by virtue of its position. It follows that it is not able to properly govern the preceding nucleus N3. Therefore, N3 is not p-licensed and thus gets phonetic interpretation. N3 should now be a potential governor for the preceding nucleus N2. N3 is not itself licensed and it is adjacent to N2 at the level of nuclear projection. Let us then consider the two flanking onsets. The potential governor O3 dominates a liquid r and governee dominates a neutral obstruent t. It follows that conditions for establishing an inter-onset governing relation between the two expressions are not satisfied. Therefore, N2 is not p-licensed and thus is phonetically manifested. In the next section, we consider the case where the governor is a headed expression.

3.3 When the governor is a headed expression

Properly governable empty nuclei are never interpreted before tense and aspirated consonants. Consider the examples in (16) below:

(16) when a governor is a headed expression

a. liquid + ø + a headed expression + v

arøc'a	alc'a	'the essence'
ərøc^{h}u	əlc^{h}u	'nearly'
marøk'ømø	malk'ɨm	'clean'
marøs'əŋø	mals'əŋ	'trouble'
tarøk^{h}omø	talk^{h}om	'to be sweet'
korøc^{h}i	kolc^{h}i	'troublesome'
narøs'i	nals'a	'weather'
k'orøc'i	k'olc'i	'the last'

b. nasal + ø + a headed expression + v

toŋøc^{h}imi	toŋc^{h}imi	'a food'
əmøc^{h}əŋø	əmc^{h}əŋ	'be absurd'
əŋøt^{h}əri	əŋt^{h}əri	'fake'
saŋøc^{h}i	saŋc^{h}i	'lettuce'
waŋøc^{h}aŋø	waŋc^{h}aŋ	'all'
maŋøc^{h}i	maŋc^{h}i	'hammer'

c. headless obstruent + ø + a headed expression + v

kakøs'i	kaks'i	'bride'
sɛkøs'i	sɛks'i	'wife'
nøkøt'ɛ	nɨkt'ɛ	'wolf'
kukøs'u	kuks'u	'noodle'
ikøs'arø	iks'al	'funny'
nakøc'i	nakc'i	'squid'

It can be seen that the empty nucleus before a headed expression is never realised. Since

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headed expressions can always govern headless expressions, this is simply understood as government in terms of headship of a governor. The word *arøc'a* is taken as an example:

(17) *arøc'a* alc'a 'the essence'

a.

O1	N1	O2	N2	O3	N3
	|	|	|	|	|
	x	x	x	x	x
	|	|		|	|
	a	R		c'	a

b.

N << P.G << N

			|		|
O1	N1	O2	N2	O3	N3
	|	|	|	|	|
	x	x	x	x	x
	|	|		|	|
	a	R		A	a
		⇑		|	
		|		ʔ	
		|		|	
		|		H	
		|		|	
		|		I	
		⇑	_____	⇓	

inter-onset government

The configuration (17a) represents the lexical structure of *arøc'a*. Note that the penultimate empty nucleus N2 has a potential proper governor, which is not licensed. N2 is preceded by a liquid and is followed by a headed stop c'. (17b) shows that the two conditions for licensing of empty nuclei are satisfied. That is, the empty nucleus N2 is properly governed by N3, and O3 governs O2. Therefore, N2 is not phonetically ralised. As in (13), the segment r followed by a licensed empty nucleus obtains the element ʔ deriving [l].

Let us consider the examples in (16c). The word *kakøs'i* 'bride' is taken as an instance:

(18) *kakøs'i* kaks'i 'bride'

a.

O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
k	a	k		s'	i

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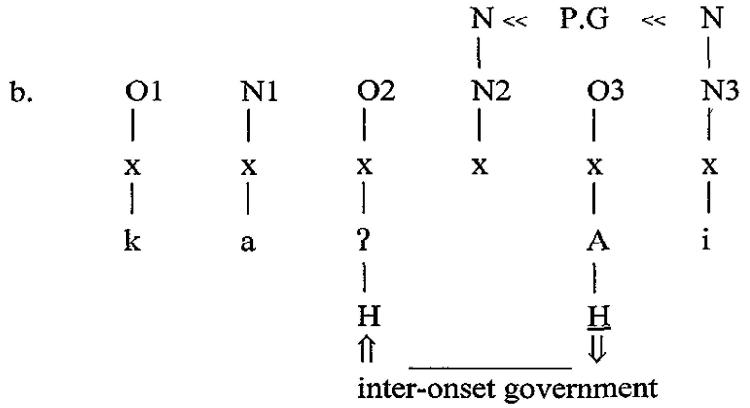

(18a) represents the lexical structure of *kakøs'i*. Note that the penultimate empty nucleus N2 has a potential proper governor, which is not licensed. N2 is preceded by a headless stop, k and is followed by a headed stop s'. (18b) shows that the two conditions for licensing of empty nuclei are satisfied. That is, the empty nucleus N2 is properly governed by N3, and O3 governs O2. Therefore, N2 does not receive phonetic interpretation.

To sum up, empty nuclei which are followed by headed obstruents are never interpreted in Korean. It means that headed expressions can govern all headless expressions. Let's go on to the case where the governor is a nasal.

3.4 When the governor is a nasal

It gets interesting, when we look at examples where the potential governor is a headless obstruent of a nasal. Let us first consider the case where a nasal acts as a governor. Relevant examples are given in (19) below:

(19) When the governor is a nasal

a. liquid + ø + nasal + v

sərøma	səlma	'perhaps'
ərøma	əlma	'how much'
s'ərømɛ	s'əlmɛ	'sleigh'
karømɛki	kalmɛki	'sea gull'
korømok	kolmok	'alley'
korømu	kolmu	'a (sewing) equipment'
yərømɛ	yəlmɛ	'fruit'

b. nasal + ø + nasal + v

manømurø	manmul	'weed'
əmøma	əmma	'mother'
ənøni	ənni	'sister'
simømani	simmani	'ginseng-diggers
kumønirø	kumnil	'to do a stretch-up'
toŋømu	toŋmu	'friend'
əŋømaŋø	əŋmaŋ	'mess'

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	səŋønyaŋø	səŋnyaŋ	'matches'
	maŋønani	maŋnani	'scamp'

c. headless stop + ø + nasal + v

totømi	totɨmi	'strainer'
cakømac^{h}i	cakɨmac^{h}i	'some'
nakønɛ	nakɨnɛ	'guest'
sørøkøməni	sɨlkɨməni	'secretly'
kasøna	kasɨna	'girl'
kocønyəkø	kocɨnyək	'to be quiet and lonely'

The examples in (19) above show that a properly governable empty nucleus followed by a nasal is not phonetically realised, if it is preceded by either a liquid or a nasal. However, it receives phonetic interpretation, if the preceding onset is a headless obstruent.

Consider the examples in (19a), where nasals are preceded by liquids across a properly governable empty nucleus. These are contrastive with the examples in (11b), where an empty nucleus is not p-licensed between the ordered sequence of a nasal and a liquid. Therefore, inter-onset government is established between the two onsets, allowing the empty nucleus to be p-licensed, hence inaudible. The liquid r before a licensed empty nucleus must gain the element ? in Korean, as stated earlier. As a result, l is manifested. This is illustrated in (20) below:

(20) *sərøma* səlma 'perhaps'

a.

O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
s	ə	r		m	a

N << P.G << N

b.

O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
s	ə	A		U	a
		⇑		|	
		|		?	
		|		|	
		|		L	
		|_____		⇓	

inter-onset government

Consider the examples in (19b). Note that both the governor and governee are nasals. According to the Complexity Condition given in (10), equal complexity for governor and

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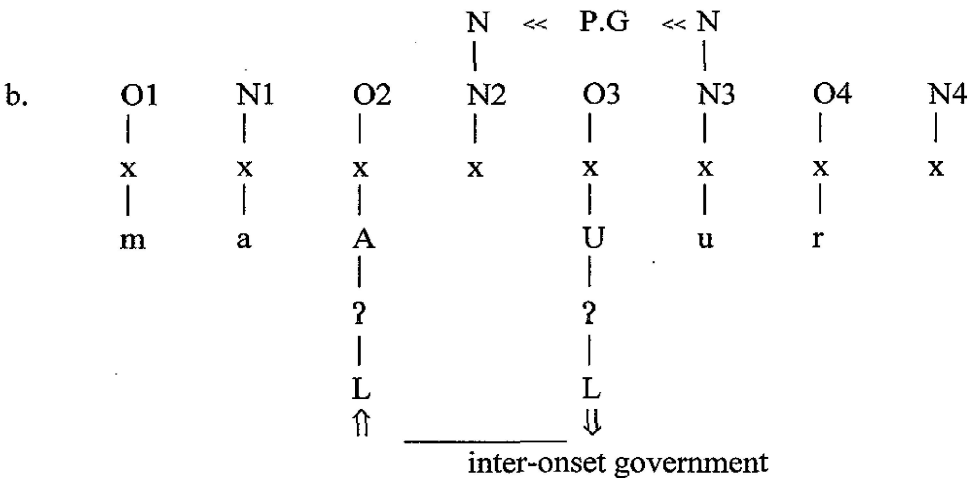
governee is allowed. The derivation of the word *manømurø* 'weed' is given in (21) below, as an instance:

(21) *manømurø* manmul 'weed'

a.

O1	N1	O2	N2	O3	N3	O4	N4
x	x	x	x	x	x	x	x
|	|	|		|	|	|	
m	a	n		m	u	r	

b.



(21a) represents the lexical structure of *manømurø*. It can be seen that the empty nucleus N2 is followed by a filled nucleus, and is flanked by nasals. In (21b), note that the satisfaction of the inter-onset governing relation between O2 and O3 allows the properly governable empty nucleus N2 not to be phonetically manifested.

What is of importance is the governing relation between a headless obstruent and a nasal. This is seen in the data in (19c). As we have seen previously, neither neutral obstruents nor nasals are headed. In addition, the number of elements involved in nasals and headless obstruents is the same. Consider the following configurations, where *totømi* is taken as an instance:

(22) *totømi* totimi 'strainer'

a.

O1	N1	O2	N2	O3	N3
x	x	x	x	x	x
|	|	|		|	|
t	o	t		m	i

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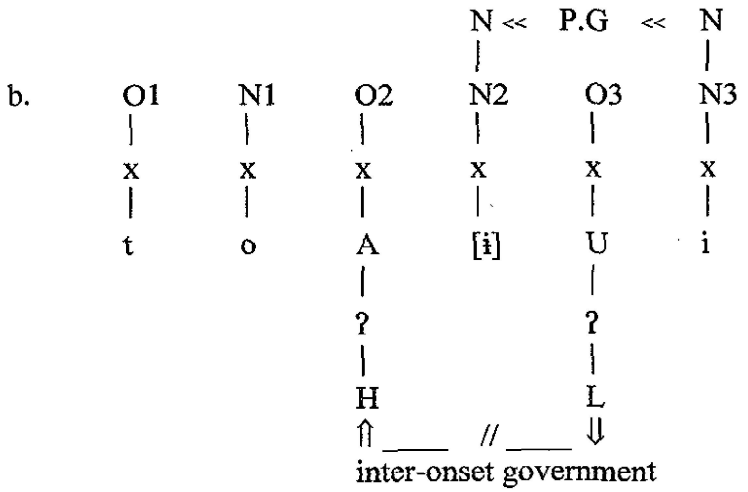

(22a) is the lexical representation of *totømi*. N3 is adjacent to the preceding nucleus N2 and it is not itself licensed. Therefore, it can be a proper governor of N2. N2 is flanked by the two onsets, a neutral obstruent t and a nasal m. They both are headless and thus the Complexity Condition will determine whether or not N2 is realised. However, as seen in (22b), the nasal m is not able to govern the preceding obstruent t. Accordingly, the empty nucleus N2 is not p-licensed and thus is interpreted.

The failure of inter-onset government between the ordered sequence of a neutral obstruent and a nasal means that the Complexity Condition is not satisfied. As noted from the above, nasals contain the same number of elements as neutral obstruents. However, it appears that they are unable to govern neutral obstruents, although the Complexity Condition allows equal complexity for the governor and the governee. We observe that if an onset dominates the element H in the governed position, it can only be governed by a headed expression regardless of its complexity. However, we cannot provide any solution but admit at present that headless obstruents can only be governed by headed expressions in Korean. The next section concerns the case where the governor is a headless obstruent.

3.5 When the governor is a headless obstruent

Let us first consider the examples given in (23) below:

(23) When the governor is a headless obstruent

a.	liquid + ø + headless obstruent + v		
	sarøku	salku	'apricot'
	narøkɛ	nalkɛ	'wing'
	t'arøki	t'alki	'strawberry'
	karøpi	kalpi	'spare ribs'
	curøki	culki	'stem'
	kurøpi	kulpi	'a dried fish'
	karøki	kalki	'to hit'
b.	nasal + ø + headless obstruent + v		
	canøti	canti	'grass'

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soŋøkosø	soŋkot	'gimlet'
tanøkorø	tankol	'patron'
caŋøtori	caŋtori	'hammer'
səmøki	səmki	'to serve'
namøcisø	namcit	'over'
oŋøcorø	oŋcol	'narrow-minded'
cəŋømarø	cəŋmal	'true'

c. headless obstruent + ø + headless obstruent + v

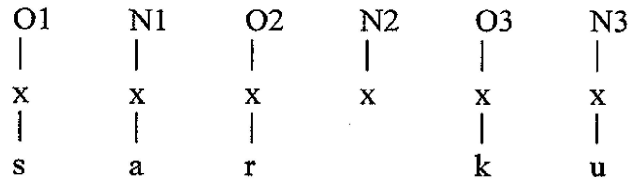
hətøcɛpi	hətiɛpi	'miscellanies'
cikøsi	cikɨsi	'slightly'
k'otøki	k'otɨki	'to persuade'
pisøtømø	pisɨtɨm	'slightly tilted'
mutøki	mutɨki	'plenty'
panøtøsi	pantɨsi	'surely'
cinøtøki	cintɨki	'a warm'

The examples above show that a properly governable empty nucleus before a neutral obstruent is p-licensed if it is preceded by either a liquid or a nasal. However, it is not p-licensed if the preceding onset is any other headless obstruent.

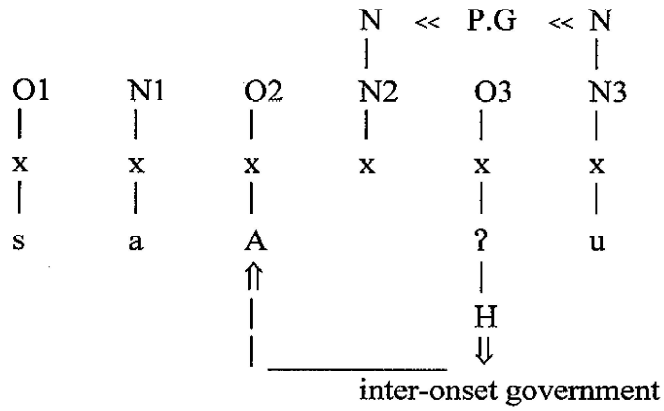
The examples in (23a) is the reversed sequence of the examples in (11c). Accordingly, this can be explained as before: since both are headless, the complexity Condition determines their governing relation. As seen above, headless obstruents are more complex than liquids. Therefore, they form an inter-onset governing domain and thus the empty nucleus is p-licensed to remain uninterpreted. Again, r is realised as l by the addition of ʔ before a licensed empty nucleus position. This is seen in the configurations given in (24) and (25) below:

(24) *sarøku* salku 'apricot'

a.



b.



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(25) *t'arøki* t'alki 'strawberry'

a.

O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
t'	a	r		k	i

b.

			N << P.G		<< N
			|		|
O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
t'	a	A		ʔ	i
		⇑		|	
		|		H	
		|_____		⇓	

inter-onset government

Let us move on to the examples in (23b), where nasals are followed by neutral obstruents. This is exactly opposite to the cases in (19c). Recall again that they both are headless and thus the governing relation between them is determined by the Complexity Condition. However, there is no element H present in the governed position and thus we predict that inter-onset government between them is satisfied according to the Complexity Condition. Consider the following configurations, where *canøti* 'grass' is taken as an instance:

(26) *canøti* canti 'grass'

a.

O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
c	a	n		t	i

b.

			N << P.G		<< N
			|		|
O1	N1	O2	N2	O3	N3
|	|	|	|	|	|
x	x	x	x	x	x
|	|	|		|	|
c	a	A		A	i
		|		|	
		ʔ		ʔ	
		|		|	
		L		H	
		⇑		⇓	
		|_____			

inter-onset government

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(26a) represents the lexical structure of *canøti*. The final nucleus N3, which is not itself licensed can properly govern the preceding empty nucleus N2. Therefore, if inter-onset government between the flanking onsets holds, N2 has no interpretation. As seen in (26b), O3 is able to govern O2 because of the Complexity Condition and hence N2 is not interpreted. By comparing the data in (19c) and (23b), note that the presence of the element H in governed position must be an additional criterion in determining inter-onset government of Korean besides headship and complexity.

Let us now consider the case where two headless obstruents fail to form an inter-onset governing relation. Our prediction is that the empty nucleus between them is phonetically interpreted, since the governee contains the element H, which means that the Complexity Condition is not valid in this context. This is confirmed by the data in (23c). Consider the following configurations:

(27) *hətøcɛpi* hətiɕɛpi 'miscellanies'

a.

O1	N1	O2	N2	O3	N3	O4	N4
x	x	x	x	x	x	x	x
h	ə	t		c	ɛ	p	i

b.

			N <<	P.G	<<	N		
O1	N1	O2	N2	O3		N3	O4	N4
x	x	x	x	x		x	x	x
h	ə	A	[i]	A		ɛ	p	i
		ʔ		ʔ				
		H		H				
				I				
		⇑ ____	//	____ ⇓				
		inter-onset government						

(27a) is the lexical representation of *hətøcepi*. It is seen that the properly governable empty nucleus N2 is flanked by two headless obstruents. However, as seen in (27b), O3 is not able to govern O2 and thus N2 receives phonetic interpretation. Note that properly governable empty nuclei are always interpreted, when they are flanked by headless obstruents. This contrasts with the case of nasals and liquids where equal complexity for the governor and the governee are tolerable. This may also provide an account for why the gemination of headless obstruents is not possible, whereas gemination of nasals or liquids is possible in Korean.

So far, we have considered that headless obstruents and nasals have the same number of elements, and that obstruents cannot be governed by any headless material. They can

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only be governed by headed expressions. In what follows, we present summary and conclusion.

4. SUMMARY & CONCLUSION

The notion of inter-onset government together with proper government determines the interpretation of domain-internal empty nuclei in Korean. Properly governable empty nuclei are phonetically realised when the potential governor is not able to govern the potential governee. It is assumed that headed expressions may govern headless expressions. Therefore, tense and aspirated expressions appear to be governors. Between headless expressions, the Complexity Condition must be considered, which requires governors to be less complex than governee.

However, Korean has a peculiar property in terms of inter-onset government between headless expressions. Concretely, if an onset in the governed position dominates the element H, it must be governed by an onset which contains the element H as head. This results in that neutral obstruents are governed only by tense or aspirated expressions. No headless expressions can govern them.

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