

SONORITY ASSIMILATION AT SYLLABLE CONTACT IN KOREAN (한국어에서 음절간 공명도 동화 현상)

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요약: 공명도 동화 현상은 여러 언어에서 관찰되어지며, 하나의 보편적인 음운 현상으로 간주되어 진다. 한국어에 있어서는 음절 경계마다 공명도 동화 현상이 나타나는데 이에 관련된 법칙으로는 음절 접촉 규칙, 최소 공명도 거리 규칙, 공명도 올림 규칙, 공명도 내림 규칙 등이 있다. 이러한 기존의 언어 보편적인 규칙들이 한국어 음운 현상에는 어떻게 적용되는지 살펴보았으며, 이에 따라 발생하는 문제점들을 지적하고 그에 대한 부가적인 해결책을 제시하였다. 한국어 자료를 통하여 공명도 동화 현상을 살펴본 결과, 음절 접촉 규칙은 기본이 되는 상위 규칙으로 확인되었으며 음운 동화 현상으로 발생빈도가 높은 공명도 올림 규칙과 공명도 내림 규칙은 위 상위 규칙을 고수하기 위하여 생성되는 과정임이 증명되었다.

I. Introduction

All the sounds can be characterized by articulation involving some type of radical obstruction. As a group, stops, fricatives, affricates, and flaps are sometimes referred as obstruents. Sounds not involving such radical obstruction are referred to as sonorants: nasal and lateral consonants, glides, and the vowels. They are typically produced without an extreme degree of oral cavity constriction. The former sounds are usually considered [-son], while the latter ones are specified as [+son]. By E. Broselow the relative sonority of various classes of sounds has been described as follows:

The Sonority Hierarchy

stops -- fricatives -- nasals -- liquids -- glides -- vowels
least sonorous <-----> most sonorous

In general, when two different sounds are adjacent in sonority hierarchy, each sound tends to assimilate to the other sound to minimize the sonority difference between them. This is called sonority assimilation and is regarded

as one of universal phonological rules across languages. Therefore, it is natural that the sonority assimilation processes are observed at syllable contact in Korean. The processes on the basis of Korean syllable structure will be analysed and discussed in the paper.

2. Data Analysis and Discussion

Mainly sonority assimilation processes will be analysed and some phonological rules of those processes will be discussed here. On the other hand, the other phonological processes relating vowels will be excluded in the paper.

2.1 Basic Phonological Processes in Korean

Let us look at some Korean data.

U.R.s.

S.R.s.

- 1) a. lo+in 'old' + 'man' → noin 'old man'
- b. pul+lo 'not' + 'old' → pullo 'not getting old'
- c. li+jang 'county' + 'head' → ijang
- d. puyo + li → puyori 'Puyo county'
- e. kacan + li → kacanni 'Kacan county'
- f. kimcon + li → kimcolli 'Kimcon county'
- g. suil + li → suilli 'Suil county'
- h. lo + jom 'street' + 'store' → nojom 'street peddler'
- i. jon +lo → jonno 'Jonno Street'
- j. eulji +lo → euljiro 'Eulci Street'
- k. tonil +lo → tonillo 'Tongil Street'
- l. reidiou → najio 'radio'(for old speakers)
- m. henri → helli 'Henry'

[l] is not allowed word initially in Korean, so it changes its features to meet the right condition. That is, word initial [l] changes to [n], then word initial [n] before [i] or [y] is deleted.

2.1.1 Nasalization in Korean

In traditional Korean grammar(Ho, 1967), some restrictions on word initial sounds have been described as follows.

6) Regressive nasal lateralization (nl → ll)

U.R.s.

S.R.s.

- a. jonlado 'jonla Province' → jollado
- b. chon 'thousand' +li 'mile' → cholli
- c. Sinla 'old kingdom's name' → Silla

We have seen that Nasal Lateralization Rule applies both in syllable-initial position, as in (5), and in syllable-final position as in (6). At a first glance, it seems that this process is not a structurally conditioned, or syllable sensitive process, but rather an unconditioned assimilation process. So, whenever [n] and [l] are adjacent, [n] obligatorily assimilates to [l] regardless of their syllable position. These assimilation processes have been analyzed as an unconditioned bi-directional lateralization by Iverson and Kim(1987).

7) a.[n] Lateralization

$$\begin{matrix} n & l & \rightarrow & l & l \\ l & n & & & \end{matrix}$$

b.[l] Gemination

$$l \rightarrow ll$$

c.[l] nasalization

$$l \rightarrow n / C _____ \\ \#$$

Also they have proposed that [l] gemination rule and [l] nasalization rule following [n] Lateralization. But (7a) and (7c) are contradictory, so they need an adhoc rule (7b) to prevent applying (7c) in case of (5) and (6). That is, syllable initial rule, [l] nasalization would not be applicable if we assume the geminated [l] after Lateralization belongs to both coda of the preceeding syllable and onset of the following syllable being ambisyllabic. However, Iverson and Kim have just stated rule (7a) without providing any motivation of Lateralization. They consider the lateralization process as an unconditioned rule separating from other assimilation processes. But it is unnatural to make a strong rule as in (7a) isolating it from other

phenomena. Also we would get a wrong surface form *[kyunjenon] in case of (8d) if we follow (7c). We assume the bi-directional Lateralization is closely related to syllable structures and place assimilation processes in Korean. Let us take more examples.

- | | |
|---|--------|
| U.R.s. | S.R.s. |
| 8) a. pup+yul → pumnyul 'law' | |
| b. kimsakas+lon → kimsakannon 'theory of Kimsakas.' | |
| c. kuk+lon → kunnon 'government policy' | |
| d. kyunje+lon → kyunjeron 'economics' | |
| e. yuk+li → yunni 'six miles' | |
| f. kusim+lon → kusimnon 'global theory' | |
| g. kong+lon → konnon 'empty theory' | |

Looking at (8c), Kim(1976) has mentioned that [l] becomes [n] by (2)Word Initial Rule and [k] becomes [n] assimilating to the following [n]. But Word Initial Rule can be applied only word initially, as in (4).

- | | | |
|------------------------------|-------------------------------------|---------------------|
| 9) a. yuk li
'six' 'mile' | b. kuk lon
'government' 'theory' | U.R.s. |
| yuk ni | kuk non | 2) [l] Nasalization |
| yuk i | ----- | 3) [n] Deletion |
| ----- | kun non | Nasalazation |
| yug i | ----- | Voicing |
| * yugi | kunnon | S.R.s. |
| | | |
| c. pup lyul
'law' | d. kyunje lon
'economics' | U.R.s. |
| pup nyul | non | 2) [l] Nasalization |
| pup yul | ----- | 3) [n] Deletion |
| pub yul | kyunje non | Voicing |
| *pubyul | *kyunje non | S.R.s. |

Kim's approach is not satisfactory to account for all Korean data except data. In the above derivation of (9), we have seen another very productive process in Korean which is called Nasalization.

10) Nasalization

[-son] → [+nasal] / ____ [+nasal]

- 11) U.R.s. S.R.s.
- a. pap + mul → pammul 'rice water'
 - b. sip + nin → simnin 'chew'
 - c. nes + mul → nenmul/nemmul 'stream'
 - d. kut + nin → kunnin 'walk'
 - e. kuk + mul → kunmul 'soup'
 - f. kak + nin → kannin 'peel'

Note: [i] is a high, back, unrounded and tensed vowel in Korean.
[] and [u] are unified as [u].

Note that both [nenmul] and [nemmul] are possible for (11c), optionally adopting additional place assimilation process. We can assume that all the processes which we have observed so far have some common features and relationship among themselves. In other words, consonants tend to compromise each other through various kinds of assimilation processes when they are adjacent at a syllable boundary.

2.2 Sonority Assimilation in Korean

2.2.1 Consonant Sonority Hierarchy

Let us observe those assimilation processes, as in (1), (8) and (11) in view of sonority assimilation regarding the consonant sonority hierarchy and syllable structures in Korean. Let us look at a general and basic Sonority Hierarchy in Korean.

12) Consonant Sonority Hierarchy

stops	less sonorant
fricative	
nasals	
liquids	
glides	
vowels	more sonorant

Sonority features are different from other features in the sense of multiple tiers. It is difficult to describe a formula relating sonority assimilation processes with binary features such as [+sonorant], so let us make general statements rather than formal rules.

13) Sonority Raising Rule

If C1 is less sonorant than C2 in the C1] [C2 sequence, C1 raises to assimilate to the sonority of C2.

14) Sonority Lowering Rule

If C1 is less sonorant than C2 in the C1] [C2 sequence, C2 lowers its sonority to assimilate to the sonority of C1

2.2.2 Rules Relating Syllable Structure

Here, we have seen the syllable boundaries between two consonant clusters, and we need to introduce an important law regarding syllable structures.

15) Syllable Contact Law (Vennemann 1983)

A syllable contact of the form C1] [C2 is favored to the extent that the sonority of C1 exceeds that of C2 .

Following (15), he has also proposed two additional laws.

16) The Initial Law (Onset Constraint)

The less sonorant sound is preferred to the more sonorant sound syllable initially.

17) The Final Law (Coda Constraint)

The more sonorant sound is preferred to the less sonorant sound syllable finally.

In Korean, there are very simple internal syllable structures by Coda Constraint and Onset Constraint. That is, there are no consonant clusters in a syllable, except obstruent geminates. However, potential clusters are

created by the combination of consonant final morphemes with consonant initial morphemes. To control these clusters, assimilation takes place, and these assimilations are governed by the sonorant strength hierarchy. In general, we can say that consonant strengthening takes place in syllable-initial position while weakening processes occur in syllable-final position according to (15), (16) and (17). Korean shows some phonological processes conforming to these claims. That is, tensing obstruents syllable initially and the word-initial [l] nasalization can be regarded as strengthening processes satisfying The initial Law. On the other hand, we can say that Intervocalic Voicing is one of the weakening processes.

2.2.3 Syllable Structure in Korean

Possible consonant clusters following (15) in Korean can be described as follows.

18) a. Possible Clusters at Syllable Contact (based on (15))

[liquid] [liquid]

il li -ll `one mile`

[liquid] [nasal]

jil mun -lm `question`

tal nore -ln `moon's song` * ln by onset constraints

[liquid] [obstruent]

sil param -lp `mild breeze`

nal do -ld `also weather`

kal gori -lg `hook`

[nasal] [obstruent]

acim pap -mp `breakfast`

can pap -np `coldrice`

wun bi -nb `progress`

kam ta -mt `close`

cintalle -nt `azalea`

wunte -nt `great`

kamkak -mk `sense`

tande -nd `contemporary`

konku -nk `tool`

[nasal]	[nasal]	
simmun	-mm	`ask'
simnin	-mn	`plant'
sonmul	-nm	`present'
sinnata	-nn	`excited'
konmul	-nm	`bribe'
konnori	-nn	`ball play'

b. Impossible Clusters at Syllable Contact (based on (15))

*[obstruent]	[nasal]	→	[nasal][nasal]
*[obstruent]	[liquid]	→	[nasal][nasal]
*[nasal]	[liquid]	→	[nasal][nasal]
[m]	[l]	→	[m][n]
[n]	[l]	→	[n][n]

Note that any *[C][n] sequences are excluded from possible clusters from Korean Onset Constraint such as *[n] as in English. One real exceptional case, *[l][n] in (18a) will be discussed after explaining impossible clusters first.

2.2.4 Conditions Changing Sonority

We have seen sonority assimilation processes apply to modify impossible syllable structure satisfying (15)SCL as in (18b). We have also noted that the assimilation processes (13)Sonority Raising Rule and (14)Sonority Lowering Rule can not be applied between obstruents and liquid jumping over the adjacent level by another condition.

19) Maximal Distance Condition (in changing sonority)

The distance between an underlying C1 and a surface C1' should not far crossing an adjacent level in the sonority hierarchy after whole processes.

In other words, neither obstruent can become liquids nor vice versa violating (19)Minimal Distance Condition. Looking at (8a), (8b) and (8c) obstruents and liquids compromise and both become nasals keeping their place of articulation when obstruents precede liquids. That is, obstruents raise one level becoming nasals and liquids lower one level becoming nasals

by the application of rules (13), (14) to satisfy Syllable Contact Law.

20)a.	kuk lon	b.	kimsakas + lon	U.R.s.
	-----		kimsakat	Coda Neutralization
	kun lon		kimsakan lon	13)
	kun non		kimsakan non	14)
	kunnon		kimsagannon	S.R.s
c.	kusim lon	d.	kon lon	U.R.s.
	-----		-----	13)
	kusim non		kon non	14)
	kusimnon		konnon	S.R.s.

Looking at the above examples, we find that the condition (19)Maximal Distance Condition(MDC) should be an across the board rule which deals with an input and an output. For instance, if we try to apply rule (13) successively in case of (20b), we would get *kimsakallon. So, MDC should regard the distance between underlying forms and the derived forms rather than those of internal stages. The motivation of (19) would be from the recoverable of the underlying forms from surface forms by Korean speakers. Also rule ordering between (13) and (14) is necessary to account for the data. Sonority Raising Rule should be applied first, and Sonority Lowering Rule follows Sonority Raising Rule to satisfy SCL. In other words (13) has priority to (14), and (14) is only applicable after application of (13) or applying (13) is not possible for other structural reasons such as dissimilarity of place of articulation. Let us turn to the problematic case , *[ln] sequence in (18a). Sonority raising assimilation should apply even though the underlying form already atisfies (15)SCL as below.

- 21) a. tal+nole 'moon's song' → tallore
 b. il+nyon 'one year' → illyon
 c. jilmun'question' → jilmun
 d. malmi 'chance' → malmi

How can we explain the impossibility of *[ln] sequence? [lm] clusters do not undergo assimilation process but [ln] clusters can not stand as they are and become [ll]. If we assume Minimal Sonority Distance Constraint in Zec's paper can be extended to the clusters combining two syllables in Korean, we are able to explain the impossibility of [ln] sequences. [l] and

[n] can not survive because they are adjacent in the sonority hierarchy scale. If so, why is [lm] not affected by the minimal distance constraint? This suggests that [n] and [m] have different sonority rankings.

2.3 Other Features in Sonority Ranking

Zec(1988) has said that some other features are selected for sonority rankings on a language-particular basis and the relative sonority of those is language universal. According to the proposal, languages may differ as to which of the features they choose to include in their language-particular scales, as long as they retain their relative hierarchical arrangement.

2.3.1 Subdivision in Sonority Ranking

Additional features may introduce further subdivision for building language-particular sonority scales as follows.

22) Relative Sonority

[+anterior] < [-anterior]
 [-coronal] < [+coronal]
 [-continuant] < [+continuant]
 [-voiced] < [+voiced]

23) [-high] > [+high]
 [-cons] > [+cons]
 [+son] > [-son]
 [+cont] > [-cont]
 [+voice] > [-voice]

[+ant] < [-ant]
 [+cor] > [-cor]

Note: The features ANTERIOR and CORONAL can be introduced at any point in the hierarchy.

But she did not make the relative hierarchy between anteriority and coronality. We would have contradictory results if we assume a language simultaneously takes both anteriority and coronality at the same level. For instance, at the nasal level, [n] would be more sonorant than [m] if we apply anterior feature, but [m] would be less sonorant than [n] if we apply

coronal feature. We could have two possibilities figuring out the relative hierarchy between anterior features and coronal features assuming both of them are chosen at the same level as follows.

order	order
24) a. [-ant] > [+ant] 1	b. [+cor] > [-cor] 1
[+cor] > [-cor] 2	[-ant] > [+ant] 2

We could derive relative sonority hierarchy of nasals in a language as either [n] > [n] > [m] if we assume (24a) or [n] > [n] > [m] if we follow (24b). But the difference between the two structures in (24) is not so crucial for explaining Korean data since [ln] sequence is excluded at syllable contact in Korean as we mentioned above. In Korean, we select at least voicing features at the level of obstruents and coronal features at the level of nasals.

2.3.2 Subdivision in Korean

Let us look at sub-divided sonority hierarchy in Korean.

25) Sonority Sub-Hierarchy in Korean

Main-Division	Sub-Division	
obstruent	[-voiced]	least sonorant
	[+voiced]	
nasal	[-coronal]	
	[+coronal]	
liquid	[+lateral]	
	[-lateral]	most sonorant

Note that we have also chosen [+lateral] feature to sub-divide liquids. In general, approximant, [r] is considered as more sonorant than lateral [l], as [+lateral] < [-lateral]. But we are not sure whether the relative hierarchy of the lateral feature can also be universal across languages. Now we are able to explain the impossibility of [ln] sequence. In other words, [n] is more sonorant than [m] in Korean, so [l] and [n] are not sufficiently

distant from each other while [l] and [m] are. According to Zec's dissertation(1988), [n] is more sonorous than [m] following liquids in consonant sonority hierarchy in Latin. Also Zec has reported that [n] and [ŋ] are ranked to the higher than [m] among 4 level in Chukchee sonority scale. Now let us try to apply rule (13) or (14) for [ln] sequenced words. We have found the neither (13) nor (14) are applicable for those data, because the two rules (13) and (14) are motivated to satisfy the Syllable Contact Law. So we need an opposite directional Sonority Raising Process to (13) to derive the right surface forms in (21). In other words, [n] raises its sonority assimilating to the sonority of the preceding [l] [ln] sequences.

2.3.3 Verb Conjugation in Korean

26) a. wul 'cry'	b. sal 'live'	
wulta	salta	present
wulko	salko	Verb and
wulmyon	salmyon	if Verb
wurora	sarara	order verb
*wulni/wuni	*salni/sani	since verb
wurini	sarini	
wulli	salli	transitive Verb

Note: [r]s in /wurini/ and /sarini/ are derived from [l] by Intervocalic Voicing

27) Minimal Sonority Distance Constraint

Two adjacent C1) and [C2 can not stand when they are next to each other in sonority hierarchy.

We are able to rephrase the [l] deletion phenomenon by the same fact. That is, the sequence [ln] is not allowed by 27) Minimal Sonority Distance Constraint (from now on MSDC). We, therefore, need some processes not to violate the rule. That is, [l] is deleted before [n] or a default vowel [i] is epenthesized adding another syllable for some speakers, rather than applying an assimilation rule unlike noun cases. The reason for deleting [l] or epenthesizing [i] rather than making [ll] sequence unlike noun compounds are to prevent the confusion between the two words wuni 'since you cry' and wulli 'make someone cry'.

2.3.4 Strength Assimilation Rules

Still we have another thing remaining to be explained. Why does [ln] becomes [ll], not [nn]? In general, the sonority raising rule is preferred to the sonority lowering rule. The latter one is applied only when the former rule is not applicable by some other restriction such as place of articulation as in (20a) and Maximal distance condition as in (20b). Vennemann(1983) has proposed the following rule.

28) Strength Assimilation Law

If Consonantal Strength is assimilated in a syllable contact, the Consonantal Strength of the stronger speech sound decreases.

Rephrasing (28) in terms of sonority scale, less sonorant one generally assimilate to the sonority of higher one in sonority assimilation process. So, [ll] sequence derived from [ln] in (21) can be explained by two facts: that is, the motivation of the change is from Minimal Sonority Distance Constraint, and sonority raising rule is applied following the Strength Assimilation Law. Also, we are able to explain the reason why (13), Sonority Raising Rule has priority to (14), Sonority Lowering Rule according to Strength Assimilation Law. But we have stuck with another big dilemma sub-categorizing nasals as [n] > [m] in sub-divided sonority hierarchy. Because we allow [mn] or [nn] sequences which violate MSDC. MSDC may not be the only reason for the impossibility of [ln] sequence in Korean. For example, the common explanation of the pair or 'blink' and *'bnick' in English has been done by MSDC. But why are not *[tl-] and *[dl-] possible in English? Why are *[pw-] and *[bw-] out while [tw-] is allowed? It is not possible to explain all the data by MSDC even though we adopt coronality to sub-divide obstruents in English. If we sub-divide English obstruents by [-coronal] < [+coronal], [t] and [d] should be more sonorant than [p], [b], [k] and [g]. Following the assumption, the former cases, *[pw-] and *[bw-] must be allowed if [tw] is possible sequence by MSDC.

2.4 Place Features

2.4.1 Place Assimilation Processes

The explanation is that the place of articulation of the adjacent sounds play a very important role regarding sonority assimilation processes. In other words, [l] and [n] are close in the sonority hierarchy scale in Korean, and additionally they share same place of articulation. Consequently, they

are too vulnerable to stay as separated segments because of their similarity, and the less sonorant [n] emerges to the more sonorant [l] following (28). We are able to explain the contradictory fact of *[pw] and [tw] attributing to the same reasons. In Korean, the permitted clusters [lm] and [nm] also share at most one feature, [+sonorant] having different place features, so they can survive even though they are close in the sonority scale. Let us take a look at place assimilation processes in Korean.

- 29) a. kut + ko → kukko 'walk and'
 b. hankuk → hankuk 'Korea'
 c. kot + pon → koppon 'envelope'
 d. sinpu → simpu 'bride'
 e. yup + kuli → yukkuri 'waist'
 f. kam + kak → kankak 'sense'
 g. kakto → *katto kakto 'angle'
 h. nonto → *nonto nonto 'thickness'
 I. sokpo → *soppo sokppo 'express news'
 j. konpok → *kompok konpok 'empty stomach'
 k. apto → *atto apto 'surpression'
 l. kamtok → *kandok kamtok 'surpervisor'

We can generalize the above assimilation processes as follows.

- 30) a. [+ant] ___ [+ant] [+ant]
 [+cor] [-cor] _____ [-cor]
- b. [+ant] ___ [-ant] [-ant]
 [+cor] [-cor] _____ [-cor]

Note that the place assimilation processes change only the preceding sounds in consonant clusters assimilating to the place of the following sounds, but not vice versa. Looking at the data and generalization in (29) and (30), we can say consonants which have place of articulation of [+ant] [+cor] has tendency to assimilate to any place of the following sounds as in (29a) to (29d). Consonants of [+ant] [-cor] undergo place assimilation process only if it is followed by [-ant] [-cor] as in (29e) and (29f). But consonants of [-ant][-cor] never change their place of articulation regardless of any place of the following sound. Consequently, we are able to derive the following order for relative strength of places in Korean.

31) Relative Strength of Place Features

[-ant] [+ant] [+ant]
[-cor] [-cor] [+cor]

We have seen that [+ant] [+cor] sounds are the weakest and they are easily assimilated to the place of following sounds. But [l][m] stays since [m] can not undergo place assimilation processes to a weaker place, [n] which has [+ant] and [+cor] features. As discussed so far, we have to consider both place features and MSDC in consonant sequences in sonority assimilation processes because they interact with each other to justify whether assimilation processes are possible or not. But this tentative approach is not fully satisfactory. We do not have any further solution for this problematic examples.

2.4.2 Ambisyllabicity in Korean

Additionally, let us look at another sonority assimilation process based on the revised Korean Sonority Hierarchy. [l] becomes [r] vocally and stays in onset position. Note that [l] and [r] are not contrastive phonemes but allophones as a [r] and a flap [D] in English. So, [l] and [r] are not reflected in Korean spelling system. We have regarded [l] nasalization as a strengthening process in syllable-initial position following (16), Syllable initial Law. If so, how can we explain the opposite phenomenon which syllable Initial [l] becomes [r] when it is between vowels?

- 32) a. i 'two' + li 'mile' → iri
b. te 'big' + lo 'road' → tero
c. il 'work' + i 'sub. M' → iri
d. kul'tunnel' + i 'sub.M' → kuri

This suggest that [l] becomes ambisyllabic after resyllabication rather than syllable initial as follows.

33)

a. V CV V C V
i + li → i l i

b. CVC V C V C V
 kul + i → k u l i

That is, the C-element dominating the segment [l] is associated with both the preceding and the following syllable after resyllabication so that the segment is not affected by (16), Syllable initial Law. That is, ambisyllabic [l] becomes the weaker, the more sonorous [r]. This weakening of intervocalic [l] supports the ambisyllabicity [l], since one of the main characteristics of ambisyllabicity is that the ambisyllabic segment is weaker than its counterpart in monosyllabic position. For example, English [t] and [d] are considered as ambisyllabic in the environment V__V and they become flap [D] as in [wat r] → [waD r]. If we closely look at 22) sonority hierarchy pattern, we can see another subcategorization in the hierarchical scale. Voiceless consonants are less sonorant than voiced ones. For instance, [k] is less sonorant than [g] among obstruents in Korean. Also note that voicing features among obstruents are not phonemically contrastive, either, but they are allophones as [l] and [r] in Korean. Similarly, voiceless obstruents become more sonorant, voiced counterpart of them intervocalic being ambisyllabic.

34) Sonority Raising Rule 2 (allophonic changes)

A consonant between vowels raises its sonority in sub-divided boundary keeping other features.

That is, voiceless obstruents and laterals between vowels become ambisyllabic and raise their sonority in the boundary of the sub-divided hierarchy, but they should keep other features. For instances, a [p] becomes an its allophonic part a [b] and a [k] becomes a [g] between vowels.

35)

a. jip + e → jibe `in the house`
 b. i + kirin → igirin `this giraffee`

C V C V V C V C V C
 j i b + e i + g i r i n

3. Summary and Conclusion

So far we have discussed 4 sonority assimilation processes in Korean. Summarizing the discussion, various kinds of sonority assimilation processes go on at syllable contact as in other languages. For instance, Nasalization and Lateralization in Korean were considered as simple phonological processes by some traditional Korean linguists such as Kim, but we found that those rules are contradictory each other and they can not account for all the Korean data. We are able to explain those phenomena as sonority assimilation processes. Sonority hierarchy is an important feature to explain assimilation processes and it includes manner of articulation and place of articulation. Sonority hierarchy trees are different among languages because each language takes specific features at some levels. Syllable Contact Law is strongly kept in Korean syllable structures and the two sonority assimilation processes (13) and (14) are motivated to satisfy Syllable Contact Law. Sonority Raising Rule (13) has priority to Sonority Lowering Rule (14) following Strength Assimilation Law. But the other sonority assimilation process for the exceptional case, [ln] sequence becomes [ll] motivated by Minimal Sonority Distance Constraint and dissimilarity preference. The last case of sonority assimilation processes called a weakening process is motivated by ambisyllabicity of the intervocalic consonant.

Consequently, we evidenced that Sonority Assimilation Processes that are common in Korean are language universal features. But it is language particular to adopt variables such as place features in sonority hierarchy through sonority assimilation processes.

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