「언어연구」, 제22권 제1호(2005), 51~67

# Obstruent Nasalization: An Optimality-Theoretic Account

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**Kim, Ki-Yeol. 2005. Obstruent Nasalization: An Optimality-Theoretic Account.** *Linguistic Research* 22.1, 51-67. This paper discusses a Korean phonological rule, Obstruent Nasalization, i.e., an obstruent is phonologically nasalized when followed by a nasal. As is well-known, this rule is productively prevalent in Korean, but not cross-linguistic. This paper explores the motivating forces of why this cross-linguistically unusual phenomenon occurs. I will employ the framework of Optimality Theory to account for the nasalization in this paper. In a traditional approach, like a rule-based theory, intermediate stages are essential to derive grammatical outputs. However, in an Optimality-Theoretic analysis we do not need to posit a serial derivation and no intermediate stages are necessary to account for a correct form. **(Michigan State University)**

**Keywords** obstruent nasalization, optimality-theoretic account, intermediate stages, serial derivation

## 1. Introduction

Vowels are originally oral sounds but before a tautosyllabic nasal, they are naturally nasalized. This phenomenon is called 'Vowel Nasalization', which appears in all of the languages in the world. We can recognize this fact whenever we examine a vowel-nasal sequence within a syllable in any language. Then, is a consonant affected by its adjacent nasal? We have often observed that a nasal affects to its following voiceless obstruent and this is explained by *NC̥ (Kager 1999; Pater 1999; among others). In that case, one of the strategies to prevent a nasal plus voiceless obstruent sequence is that the obstruent is voiced. Kager (1999) indicates that this is because of 'nasal leak'. He notes that, in a sequence of nasal plus voiceless obstruent, the raising of the velum takes some time and is not yet completed at the point where the obstruent begins. At that point (which is actually perceptually determined), there is still a bit of air flowing out of the nose, so-called 'nasal leak'. However, 'Obstruent

Nasalization', which an obstruent is phonologically nasalized by its following nasal in an obstruent-nasal sequence, does not seem to be a common phenomenon since there are few cases of obstruent nasalization cross-linguistically.[1]

In this paper I discuss a Korean prevalent phenomenon, Obstruent Nasalization, i.e., an obstruent is nasalized when it is followed by a nasal. It is a very productive phenomenon in Korean, but cross-linguistically rare. I want to explore the motivation of why this cross-linguistically unusual phenomenon happens.

A rule-based theory (Kim-Renaud 1991) and feature geometry theories (K-H. Kim 1987; Iverson & Sohn 1994; H-K. Ahn 1999, 2000) cannot explain why the phenomenon is cross-linguistically rare, and why some consonant sequences undergo some processes and why some do not. So we cannot easily capture the motivating roles of consonant sequence restrictions within those theories. A couple of Optimality-Theoretic analyses (Davis & Shin 1999; H-S. Kang 2002) have dealt with Obstruent Nasalization along with nasal-liquid alternations,[2] so more constraints are required and the analyses seem to be rather complicated. Besides, there are certain types of examples that they have not considered with reference to Obstruent Nasalization. In some cases of Korean, nasal /n/ is inserted before a high front vowel or a palatal glide and then the inserted nasal nasalize a preceding obstruent. I will also consider such data and analyze them within Optimality Theory with fewer constraints that we can easily think.

In section 2 of this paper, I present the Korean data which show Obstruent Nasalization. In section 3, I examine some previous analyses with respect to the nasalization and indicate some problems of those analyses. In section 4, I analyze the nasalization data and show motivating forces of that phenomenon in terms of Optimality Theory (Prince & Smolensky 1993; McCarthy & Prince 1993a, b; McCarthy & Prince 1995; Kager 1999; among others). Finally, I conclude the paper in section 5.

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[1] In H-K. Ahn (1999, 2000), he mentions that, except for Korean, he has found only two languages that have a similar phenomenon: Chukchee and Latin.

[2] In Korean, an /nl/ sequence is realized as /ll/ (e.g., /non+li/ → [nolli] 'a logic') or /nn/ (e.g., /imun+lon/ → [imunnon] 'phonology') and an /ln/ sequence is realized as /ll/ (e.g., /pul+niŋ/ → [pulliŋ] 'incapability'). These different patterns are, of course, due to different morphological structures. However, I will not deal with this matter in this paper because it goes beyond the

## 2. Data

The following data show that Obstruent Nasalization occurs, where the stops are nasalized by the following syllable-initial nasal.

| (1)[3] | a. /k, $k^h$, k'/ | → | [ŋ] | Gloss |
|---|---|---|---|---|
| | /sik+mul/ | → | [siŋ.mul] | 'plant life' |
| | /tak'+nɨn/ | → | [taŋ.nin] | '(bẹ) polishing' |
| | /puək$^h$+mun/ | → | [pu.əŋ.mun] | 'a kitchen door' |
| | b. /p, $p^h$/ | → | [m] | |
| | /$t^h$op+nal/ | → | [$t^h$om.nal] | 'a saw blade' |
| | /ap$^h$+maɨl/ | → | [am.ma.ɨl] | 'a front village' |
| | /ap$^h$+ni/ | → | [am.ni] | 'a front tooth' |
| | c. /t, $t^h$/ | → | [n] | |
| | /pət+ni/ | → | [pən.ni] | 'a projecting tooth' |
| | /nat$^h$+mal/ | → | [nan.mal] | 'a word' |
| | /kat$^h$+ne/ | → | [kan.ne] | 'be identical' |

In (1a) velar stops are changed into a velar nasal by the following nasal, in (1b) bilabial stops are turned into a bilabial nasal, and the last examples, (1c), show that coronal stops are changed into the same place nasal by the following nasal.

The following examples show that an affected sound of nasalization can be expanded to the sounds with [+strident] feature such as /c, $c^h$, s, s'/. Thus we can consider the target sound of nasalization is commonly called 'obstruent'. That is the reason why we have regarded such a phenomenon as 'Obstruent Nasalization'.

(2) /pic$^h$+næm/ → /pit+næm/ → [pin.næm] 'brightening'

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scope of this paper.

[3] /k, p, t/ are plain stops, /$k^h$, $p^h$, $t^h$/ are aspirated stops, and /k', p', t'/ are tensified stops. These

| | | | | | |
|---|---|---|---|---|---|
| /nic+mo/ | → | /nit+mo/ | → | [nin.mo] | 'rice sprouts transplanted late' |
| /cas+namu/ | → | /cat+namu/ | → | [can.na.mu] | 'a Korean nut pine' |
| /is'+nin/ | → | /it+nin/ | → | [in.nin] | '(be) present' |

In these cases, in fact, we can observe that one more phenomenon works on, i.e., Coda Neutralization. When a strident is immediately followed by a vowel, the strident has its original phonetic value by resyllabification as in '/pic$^h$+i/ → [pi.c$^h$i]; /is'+ə/ → [i.s'ə]', but when a strident is followed by another consonant, that is, when a strident is in coda position, it loses its own sound value and is neutralized as /t/ in Korean. Therefore, in the above examples, a coronal stop is nasalized by the following nasal.

Let us look at the examples of an obstruent-lateral sequence. If a lateral follows a stop as shown in (3), it becomes a nasal and then the nasalization of the preceding stop occurs.

(3) /obstruent+lateral/ → [nasal.nasal]

| | | | | | |
|---|---|---|---|---|---|
| /tok+lip/ | → | /tok+nip/ | → | [toŋ.nip] | 'independence' |
| /kuk+lyək/ | → | /kuk+nyək/ | → | [kuŋ.nyək] | 'nation power' |
| /hyəp+lyək/ | → | /hyəp+nyək/ | → | [hyəm.nyək] | 'cooperation' |
| /pəp+lyul/ | → | /pəp+nyul/ | → | [pəm.nyul] | 'a law' |

Above data show that an input sequence of a non-coronal stop followed by a lateral undergoes nasalization even though there is no nasal in the input.

Now consider the following data. The following data do not undergo nasalization or other phonological changes.

(4)[4] a. /nasal+obstruent/ → [nasal.obstruent]

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are all individual phonemes in Korean.

[4] In fact, a plain stop sound is voiced in an intervocalic environment in Korean (e.g., /kam+ki/ → [kam.gi]), but I do not show the voicing assimilation because a voiced obstruent in an intervocalic environment is only an allophone of the same place voiceless obstruent in Korean and it is not relevant for this study.

| | | | |
|---|---|---|---|
| /kam+ki/ | → | [kam.ki] | 'a cold' |
| /nan+toŋ/ | → | [nan.toŋ] | 'a riot' |
| /næm+sæ/ | → | [næm.sæ] | '(a) smell' |
| /dan+$c^h$u/ | → | [dan.$c^h$u] | 'a button' |
| b. /lateral+obstruent/ | → | [lateral.obstruent] | |
| /kal+pi/ | → | [kal.pi] | 'ribs' |
| /kyəl+pak/ | → | [kyəl.pak] | 'binding' |
| /nal+kæ/ | → | [nal.kæ] | 'a wing' |
| /pal+kyən/ | → | [pal.kyən] | 'discovery' |

As you can see through the above data, in the reverse consonant sequences of those in (1)~(3), no phonological processes occur. What is the motivation of these phonological patterns compared to those in (1)~(3)?

## 3. Previous Analyses

### 3.1 A Rule-Based Approach (cf. Kim-Renaud 1991)

In a traditional approach, we can posit the following rules, Coda Neutralization, Lateral Nasalization, and Stop Nasalization to account for the above phonological phenomena.

(5) a. [-son, α place] → [-cont, α place, -tense, -asp] / ___ ]$_\sigma$ Coda Neutralization (S-C. Ahn 2000)

b. [+lateral] → [+nasal] / C ___ Lateral Nasalization

c. [-cont, -tense, -asp] → [+nasal] / ___ [+nasal] Stop Nasalization

With these rules, we can derive outputs as in (6).

(6) Underlying Representation /sik+mul/ /pic$^h$+næm/ /tok+lip/

| | | | |
|---|---|---|---|
| Coda Neutralization | ---------- | pit+næm | ---------- |
| Lateral Nasalization | ---------- | ---------- | tok+nip |
| Stop Nasalization | siŋ+mul | pin+næm | toŋ+nip |
| Phonetic Representation | [siŋ.mul] | [pin.næm] | [toŋ.nip] |

In these derivations Coda Neutralization must precede Stop Nasalization and Lateral Nasalization must precede Stop Nasalization. Like this way, in a rule-based theory, intermediate stages are essential to derive grammatical outputs. But, in an OT analysis, we do not need to posit a serial derivation and no intermediate stages are necessary to account for a correct form. Setting up intermediate stages for a grammatical output in a theory even though they are not exist at the surface level is not economical and makes the theory abstract. We have to avoid abstractness for deriving a correct surface form as possible as we can when we deal with a certain phenomenon. In addition, the above derivation cannot explain why the consonant sequences in (1)~(3) undergo nasalization and why the data in (4) do not.

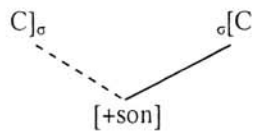
### 3.2 Feature Geometry Approaches

#### 3.2.1 Sonorant Spreading

Several different feature geometry analyses have been proposed corresponding to development of phonological theories. Of those, the following are well-acknowledged analyses proposed by Iverson & Sohn (1994) and K-H. Kim (1987), in which they demonstrated the naturalness of Obstruent Nasalization process in an obstruent-nasal sequence in terms of [+sonorant] spreading.

(7) Sonorant Assimilation (Iverson & Sohn 1994)
Spread [sonorant] from syllable-initial C to adjacent syllable-final C.

(8) Obstruent Nasalization: [+sonorant] spreading (K-H. Kim 1987)

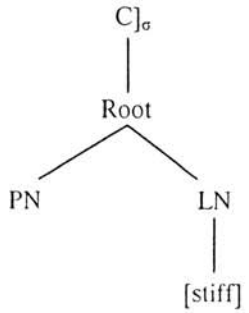



Above rules show that Obstruent Nasalization is one of assimilation processes, whereby the specified feature [+sonorant] of a nasal spreads to the root node of a preceding stop. These approaches have merit because analyzing a certain phenomenon in terms of assimilation is a well-known method to show the naturalness of some processes. However, the above rules cannot answer the question of why the phenomenon is cross-linguistically rare, in spite of emerging as a natural process (cf. H-K. Ahn 2000). Besides, these rules cannot explain the data in (3). In an example /tok+lip/ → [toŋ.nip] 'independence', in terms of the above rules, the change of /k/ → [ŋ] can be explained by '[+son] spreading', since lateral /l/ also has sonorant feature. The process of /l/ → [n] in the second syllable, on the other hand, cannot be explained by the above rules.

### 3.2.2 H-K. Ahn's (1999, 2000) Proposal

In order to block a neutralized stop plus nasal sequence in the surface, H-K. Ahn (1999, 2000) suggests a surface coda condition first as in (9), the main function of which is to allow stops with a single [stiff] feature syllable-finally at the surface level.

(9) Coda Condition: Unreleased stops must meet the following condition:




(PN: place node, LN: laryngeal node)

Next, he mentions that, as illustrated (10) below, the juxtaposition of two laryngeal features [stiff] and [voice] is a difficult phonetic maneuver without an explosion of the preceding stop sound.

(10) S]$_{\sigma}$ $_{\sigma}$[N (S: unreleased stop, N: nasal)

* [stiff] [voice]

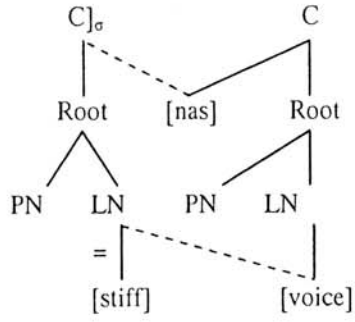
Then, there are two possibilities to avoid the sequence of features [stiff] and [voice] as illustrated in (11).

(11) a. S]$_{\sigma}$ $_{\sigma}$[N = b. S]$_{\sigma}$ $_{\sigma}$[N

[stiff] [voice] [stiff] [voice]

(11a) indicates that a nasal shares [stiff] feature with a preceding stop. This process costs too much phonetically, so it cannot be allowed cross-linguistically. A stop sound shares [voice] feature with a following nasal in (11b). This can be a possible process, but a neutralized stop cannot have [voice] feature in Korean. The only way to avoid the feature constraints in (10) and (11a) is to get rid of the [stiff] feature on the neutralized stop by adopting the remaining option in (11b), in which the two segments in question share the [voice] feature. H-K. Ahn (1999, 2000) indicates that rather than making the neutralized stop sound its voiced allophone, Korean consonantal phonology chooses to make it nasalized. He finally suggests a model of the Obstruent Nasalization process as follows:

(12) Obstruent Nasalization




But this approach still cannot account for the motivating forces of consonant alternations properly. This approach also needs some intermediate stages that an obstruent in coda position should become an unreleased stop and the unreleased stop must have [stiff] feature. Only after undergoing these processes, the grammatical form can be derived in this theory.

## 4. An OT Analysis and More Data

In order to analyze the data that show Obstruent Nasalization, I will first give a very useful Law, i.e., 'Syllable Contact Law,' suggested by Vennemann (1988), in which he phrased it in terms of consonantal strength.

(13) Syllable Contact Law (Vennemann 1988: 40)
A syllable contact A$B is the more preferred, the less the consonantal strength of the offset A and the greater the consonantal of the onset B.[5]

Since in current phonology the concept of sonority is more commonly used than strength for consonants (cf. Davis & Shin 1999), Syllable Contact Law can be rephrased as in (14).

(14) Syllable Contact Law (sonority version, cf. Davis & Shin 1999; H-S. Kang

[5] In this Law, '$' represents a syllable boundary, and 'A' and 'B' denotes segments.

2002)
When two syllables are in contact, the coda of the first syllable should be of equal or greater sonority than the onset of the second syllable.

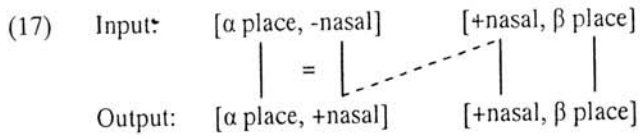
This Law is incorporated as an OT constraint by Davis & Shin (1999), and in this paper syllable contact phenomena are referred in terms of sonority.

(15) SYLLCON: The onset of a syllable must not be of greater sonority than the last segment in the immediately preceding syllable. (That is, avoid rising sonority over a syllable boundary.) (Davis & Shin 1999)

It has been shown that a pre-nasal obstruent is changed into a nasal in Korean. Then, can it be changed into any nasal? The answer for this question is, of course, no. Consider the following examples.

| | | | | |
|---|---|---|---|---|
| (16) | a. /sik+mul/ | → | [siŋ.mul] | 'plant life' |
| | | | *[sin.mul] | |
| | | | *[sim.mul] | |
| | b. /t$^{h}$op+nal/ | → | [t$^{h}$om.nal] | 'a saw blade' |
| | | | *[t$^{h}$on.nal] | |
| | | | *[t$^{h}$oŋ.nal] | |
| | c. /pət+ni/ | → | [pən.ni] | 'a projecting tooth' |
| | | | *[pəm.ni] | |
| | | | *[pəŋ.ni] | |

These examples show an obstruent in the input shares place of articulation with its changed nasal. The other candidates which do not share place of articulation with their original sounds are ungrammatical. It can be, therefore, said that the faithfulness of place of articulation between input and output is the second important thing with reference to Obstruent Nasalization. This can be shown schematically as follows:

(17) 


This diagram represents feature correspondence of an obstruent-nasal sequence between input and output. We have observed that an obstruent is changed by its following nasal in this diagram, and the place of articulation of the obstruent does not have any change while its manner of articulation does have a change. This has led to the suggestion that we need to have the following constraints with reference to the faithfulness both for the place of articulation and for the manner of articulation.

(18) a. IDENT(place): Correspondents in input and output have identical place features.

b. IDENT(manner): Correspondents in input and output have identical manner features.

I will show the application of these constraints before making an OT tableau. Correspondence relationship between input and output for some candidates from /sik+mul/ has been shown in (19).

(19) a. Input: s i k m u l

Output: s i k m u l — Violates SYLLCON

b. Input: s i k m u l

Output: s i ŋ m u l — Violates IDENT(manner)

c. Input: s i k m u l

Output: s i n m u l — Violates IDENT(place) & IDENT(manner)

Candidate (19a) cannot be the outcome because the violation of SYLLCON is fatal. The output we want is candidate (19b), and this candidate violates Idcnt(manner), so the constraint should be dominated by IDENT(place). Candidate (19c), which violates IDENT(place), is, therefore, ungrammatical. This explanation is represented by the

following tableau:

(20) /sik+mul/ → [siŋ.mul] 'plant life'

| /sik+mul/ | SyllCon | Ident(place) | Indent(manner) |
|---|---|---|---|
| a. sik.mul | *! | | |
| b. ☞ siŋ.mul | | | * |
| c. sin.mul | | *! | * |

In this tableau, IDENT(manner) is lower-ranked, thus the optimal output is selected successfully.

The following tableau shows that the grammatical form in a strident-nasal sequence can be selected by the relevant constraints.

(21) /pic$^h$+næm/ → [pin.næm] 'brightening'

| /pic$^h$+næm/ | SyllCon | Ident(place) | Ident(manner) |
|---|---|---|---|
| a. pic$^h$.næm | *! | | |
| b. pit.næm | *! | | * |
| c. ☞ pin.næm | | | * |
| d. pim.næm | | *! | * |

Candidates (21a) and (21b) violate SYLLCON because they incurs rising sonority over the syllable boundary and this violation is fatal, so they are ruled out. Candidate (21d) produces a violation of IDENT(place) since the second syllable's onset in this candidate does not share place of articulation with the input form, so it is also ungrammatical. Although candidate (21c) violates IDENT(manner), this violation is minimal here, thus it is the grammatical output in this evaluation.

Let us now consider another problem. An ungrammatical form [pic$^h$.tæm] out of /pic$^h$+næm/ cannot be explained properly with our analysis so far, since it occupies the same position with the optimal output, that is, it violates only the lowest-ranked constraint IDENT(manner) same as the correct output. Candidate [pic$^h$.tæm] is a

competitive one, but cannot be the grammatical form, thus we need to have a device that can get rid of this candidate, as shown in (22).

(22) IDENT-ONSET(sonorant): The [±sonorant] feature of an output onset is identical to the [±sonorant] feature of the corresponding input segment. (Davis & Shin 1999)

This faithfulness constraint does not allow any change of plus or minus sonorant value of the syllable onset. And it should dominate both IDENT(place) and IDENT(manner) in order to select the optimal form since it considers only onset position, thus it is more specific than the two faithfulness constraints. In addition, an onset position is phonologically stronger (Goldsmith 1990; Lombardi 1995; Beckman 1997; among others) than the other positions in a syllable, so syllable onset does not usually undergo any change.[6] The following tableau proves this fact.

(23) /pic$^h$+næm/ → [pin.næm] 'brightening'

| /pic$^h$+næm/ | SyllCon | Ident-Ons(son) | Ident(place) | Ident(manner) |
|---|---|---|---|---|
| a. pic$^h$.næm | *! | | | |
| b. pit.næm | *! | | | * |
| c. ☞ pin.næm | | | | * |
| d. pic$^h$.tæm | | *! | | * |
| e. pim.næm | | | *! | * |

If IDENT-ONSET(sonorant) is dominated by IDENT(manner), then candidate (23d) will be the outcome, but this must not be allowed. Therefore, the ranking between the two constraints has to be formed like 'IDENT-ONSET(sonorant) ≫ IDENT(manner)'.

The following evaluation of an obstruent-lateral sequence also shows that the ranking of the suggested constraints is correct and, thus, our evaluation method so far

[6] As a matter of fact, IDENT-ONSET(sonarant) is a binary constraint, that is, it considers only plus or minus identity for the sonorant feature of an onset, not the degree for it, between input and output. Thus, as we will see here after, the change of an onset [l] → [n] does not violate this

works right.

(24) /tok+lip/ → [toŋ.nip] 'independence'

| /tok+lip/ | SyllCon | Ident-Ons(son) | Ident(place) | Ident(manner) |
|---|---|---|---|---|
| a. tok.lip | *! | | | |
| b. tok.nip | *! | | | * |
| c. ☞ toŋ.nip | | | | ** |
| d. toŋ.lip | *! | | | * |
| e. tok.tip | | *! | | * |
| f. ton.nip | | | *! | ** |

Candidates (24a) and (24b) violate the highest-ranked constraint SYLLCON so these are eliminated. The sequence of [ŋ.l] in (24d) also violates SYLLCON since a liquid has greater sonority value than a nasal does, so it does not avoid rising sonority over the syllable boundary. Candidate (24e) violates IDENT-ONSET(sonorant) because the onset /l/ of the second syllable is changed into an obstruent [t], that is, the onset of the second syllable in (24e) has [-sonorant] feature but in the input it has [+sonorant] feature. Thus it is also an ungrammatical form that we have to get rid of. Then, there are two candidates, (24c) and (24f), left for further evaluation. Candidate (24c) undergoes *l*-Nasalization and Stop Nasalization, and (24f) shows *l*-nasalization and the change of place of articulation. The nasalization is allowed because IDENT(manner) is lowest-ranked, but the place change of any segment between input and output is not allowed here. As a result, in spite of the two violations of IDENT(manner), candidate (24c) is the winner in this evaluation.

Now let us consider some examples of *n*-Insertion before a stem that begins with /i/ or /y/ as exemplified in (25).

(25) a. /puək$^{h}$+il/ → /puək+**n**il/ → [puəŋ**n**il] 'kitchen work'
/cip+il/ → /cip+**n**il/ → [cim**n**il] 'house work'

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constraint since both segments have [+sonorant] feature.

/k'oc$^{h}$+ip$^{h}$/ → /k'ot+**n**ip/ → [k'on**n**ip] 'a petal'

b. /sæk+yənp$^{h}$il/ → /sæk+**n**yənp$^{h}$il/→ [sæŋ**n**yənp$^{h}$il] 'a colored pencil'

/yəŋəp+yoŋ/ → /yəŋəp+**n**yoŋ/ → [yəŋəm**n**yoŋ] 'business use'

/təs+yaŋmal/ → /təŋ+**n**yaŋmal/ → [tən**n**yaŋmal] 'outer socks'

As you can see above, /n/, which does not exist in the underlying form, appears between a stem that begins with /i/ or /y/ and a preceding stem or prefix that ends in a consonant (E-J. Han 1993, 1994; H-M. Sohn 1999; Lee & Ramsey 2000; among others).[7] After the insertion, the nasalization of the preceding obstruent occurs. It is natural that an obstruent undergo nasalization before a nasal in Korean and, as we have already examined, this can be easily captured by the constraint SYLLCON. The process of *n*-Insertion as exemplified in (25) is, however, a rather tough problem, since some words undergo *n*-Insertion, but some other words do not in the same environments of the insertion cases. Anyway, we can also analyze this phenomenon within Optimality Theory by adopting ONSET, although it will not be a perfect explanation.

(26) /cip+il/ → [cimnil] 'house work'

| /cip+il/ | SyllCon | Onset | Ident(place) | Ident(manner) |
|---|---|---|---|---|
| a. [cip]il | | *! | | |
| b. [cip]nil | *! | | | |
| c. ☞ [cim]nil | | | | * |
| d. [cin]nil | | | *! | * |

Candidate (26a), which is faithful to the input but not optimal, violates ONSET. Therefore, at least ONSET should outrank IDENT(manner). Of course all cases of *n*-Insertion (or Ø-Insertion) in such environments may not be explained by the above constraints and the evaluation method. It seems that we have to examine the internal structures of those words carefully. However, in order to focus only on Obstruent

[7] However, in such an environment, not all words undergo *n*-Insertion process, e.g., /cip+ilim/

Nasalization in this paper, I will leave this issue for future studies.

## 5. Conclusion

I have considered a phonological pattern, Obstruent Nasalization, in Korean and shown that SYLLCON plays an important role for this pattern. Constraint SYLLCON gives us a direct explanation of a motivating role of why certain consonant sequences are allowed and why some sequences are not. Even though an obstruent in an obstruent-nasal sequence has some phonological change, it shares the faithfulness of place of articulation between input and output. I have shown that this process can be explained by the faithfulness constraint IDENT(place). And I can say that there are at least two kinds of advantages in OT analysis here: first, the OT analysis can directly account for the motivation of Obstruent Nasalization and the role of syllable contact; second, the OT analysis is simple and understandable since it does not set up intermediate stages in order to explain correct forms.

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→ [cipirim] 'house name'; /sæk+yak/ → [sækyak] 'color weakness'.

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접수일자: 2005. 04. 03
게재일자: 2005. 06. 19