

A study of manner assimilation: focusing on word-initial [l]-avoidance, lateralization, and nasalization in Korean*

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Lee, Sechang, 2018. A study of manner assimilation: focusing on word-initial [l]-avoidance, lateralization, and nasalization in Korean. *Linguistic Research* 35(2), 357-379. The purpose of this paper is to provide an explanation of manner assimilation as a whole in terms of the interaction of well-defined OT constraints. It turns out that previous OT treatments of lateralization in Korean assumes the crucial role of a language-specific constraint to the effect that a sequence of *ln* or *nl* is prohibited in the output. I attempt to get rid of the language-specificity by offering to replace the constraint in question with a licensing one requiring a doubly-linked structure of [lateral], LICENSE([lateral]). With the introduction of LICENSE([lateral]) on the constraint ranking, the otherwise puzzling phenomenon of word-initial [l]-avoidance can be nicely explained. Also, by combining this strategy with syllable contact law and output-output correspondence, it will be shown that we can account for the whole range of relevant data. Clearly, the best aspect of this analysis is that it does not add any new stipulation to the theory but makes use of independently motivated constraints of universal nature, not to mention alleviating some burden on grammar thereby. (Sookmyung Women's University)

Keywords manner assimilation, lateralization, nasalization, word-initial [l]-avoidance, syllable contact law

1. Introduction

Rules in Generative Grammar were originally designed to be built from a Structural Description delimiting a range of inputs and a Structural Change specifying the operations that are performed on the input (Chomsky 1961). Therefore, the principal concern of linguistic exploration was to explicate the possible Structural Descriptions of rules and to define the possible Structural Changes of them. This general conception has carried over for decades until we meet a new, optimality-theoretic perspective in early 1990s. The idea of the

* I am grateful to anonymous reviewers for their invaluable comments.

Optimality Theory (OT, henceforth) is based on the discovery that the significant phonological regularities were to be found not in input configurations, nor in the transformational operations, but in the characterization of output structures (cf. Prince and Smolensky 1993, 2004; McCarthy and Prince 1993, 1995). This is exactly the type of evidence one needs for claiming that Universal Grammar (UG, henceforth) is based essentially on the workings of output well-formedness constraints.¹ Those well-formedness constraints are translated as universal constraints in OT framework and the argumentation of cross-linguistic variation crucially depends on the way they are ranked and how they interact. Since it is assumed in OT that there is a finite set of universal constraints in UG, it is very important to design UG in such a way that every constraint in the UG is as universal as possible, which enables us to preserve UG at a minimum cost. Inevitably, however, it should be admitted that there is also a need for a set of language-specific constraints in the grammar of every language. I argue in this vein that a desirable model of grammar should keep a minimum number of those language-specific constraints in our grammar, which promotes our approaching to an ideal UG. Approaching from this perspective, I intend to analyze various aspects of manner assimilation in Korean. Above all things, I reexamine previous OT constraints employed in earlier analyses to show that they are not properly designed in the sense of OT. And then I continue to propose an intuitively more satisfying universal constraint in my manner-assimilation analysis that fares better than in previous treatments. It will be shown that the explanation in this article has to be preferred because it provides for an economical theory that uses a minimum of apparatus.

2. Paradigm

Across syllable boundary, adjacent sonorant cluster /ln/ or /nl/ is bound to undergo the manner assimilation of either lateralization or nasalization. This article aims to provide a unified explanation for diverse ramifications of the

1 ... What is clear is that any serious theory of phonology must rely heavily on well-formedness constraints; where by 'serious' we mean 'committed to Universal Grammar'... (Prince and Smolensky 2004: 1)

manner assimilation. Characteristic instances that I will focus on in what follows are displayed below:

- (1) Initial Law
- a. /n/-deletion
- | | | |
|-------------|-----------|-----------------|
| /n̥jə-ʃa/ | [jə.ʃa] | 'woman' |
| /n̥jə-lo/ | [jə.ro] | 'urinary tract' |
| /n̥ju-tæ/ | [ju.dæ] | 'bond' |
| /n̥ik-mjən/ | [ik.mjən] | 'anonymity' |
- b. /l/-nasalization
- | | | |
|------------|-----------|-----------------|
| /l̥ak-jəp/ | [na.gjəp] | 'fallen leaves' |
| /l̥æ-il/ | [næ.il] | 'tomorrow' |
| /l̥on-mun/ | [non.mun] | 'thesis' |
| /l̥u-mjən/ | [nu.mjən] | 'false charge' |
- (2) Directionality of lateralization
- a. /p̥an-lan/ [pal.lan] 'revolt'
- /non-li/ [nol.li] 'logic'
- b. /p̥ul-nin/ [pul.liŋ] 'inability'
- /mil-nap/ [mil.lap] 'wax'
- c. /sin+l̥anmjən/ [sin.na.mjən] 'Shin Ramyun'
- /imun+l̥on/ [i.mun.non] 'phonology'
- d. /səl+l̥nal/ [səl.lal] 'New Year's Day'
- /sil+l̥nakwən/ [sil.la.kwən] 'Paradise Lost'
- (3) Manner assimilation and emergence of nasal stop
- a. /p/ + /l/ [mp]
- /hap-li/ [ham.ni] 'rationality'
- /kam-li/ [kam.ni] 'inspection'
- b. /k/ + /l/ [kɫ]
- /kjək-li/ [kjək.ni] 'isolation'
- /kuk-lon/ [kuŋ.non] 'national opinion'

As can be seen in (1), /l/ or /n/ in underlying forms are not realized as

they are in word-initial position: the former is realized as [n] while the latter is deleted. I will show later on that careful examination of the so-called 'Initial Law' in (1) gives us the insight as to the various aspects of manner assimilation in Korean. As the examples in (2a, b) make clear, the source and focus of the assimilation need not be in a linear order: the underlying /ln/ and /nl/ both surface as [l.l]. For the cases in (2c) where we have the same underlying sequence of /l/ and /n/ as in (2a, b, d), the obvious fact is that nasalization instead of lateralization occurs, exactly the opposite of what happens in the rest. The line between them is not hard to find: we find a concatenation of two morphemes in (2c, d) unlike those in (2a, b). Another perhaps more surprising fact is that nasal stops appear out of nowhere in cases where an obstruent or sonorant is followed by a lateral as shown in (3). Something very interesting is going on here. The fact that nasals often surface calls for explanation given that no nasal is given in the underlying representation.

3. Previous treatment

Before turning to my analysis, I will present previous discussions germane to the OT analysis to be offered in this article. Davis and Shin (1999, D&S henceforth) proposed a markedness constraint 'SyllCon' to handle the Korean lateralization within the framework of OT.² I examine the way SyllCon functions and point out what kind of significant problems it poses empirically as well as theoretically for standard OT-based analyses. There is yet additional concern. I will discuss that the ancillary constraint 'Similarity' D&S introduces is a constraint of arbitrary nature and rather like a typical phonological rule widely adopted since early generative tradition (cf. Chomsky and Halle 1968, known widely as *SPE*). Finally, I make a review of previous analyses adopting or slightly modifying D&S's approach and illustrate that they are also inherently

2 As far as my knowledge goes, Davis and Shin (1999) was actually the first work in the literature that attempted to formulate the precise mechanism of Korean lateralization in terms of OT universal constraint. Their SyllCon has been standardly adopted in the subsequent relevant literature, as will be attested in this section. I do not question the status SyllCon as a universal constraint. My idea in this work originates from questioning the validity of D&S's 'Similarity' which will be introduced shortly.

problematic in that the same serious problems arise as above.

A potential consonant concatenation results when two syllables come into contact with each other. The strength difference between these adjacent consonants has been noted to play a significant role in accounting for phonological alternations in many relevant languages in traditional literature (Hooper 1976; Murray and Vennemann 1983; Vennemann 1988, among others).³ D&S captured the generalization thus obtained in terms of sonority difference. The descriptive generalization now reads as follows:

- (4) Syllable Contact (SyllCon) D&S (1999: 286)
 “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.)

The SyllCon in (4) requires that a descending sonority scale should be preferred to ascending one between adjacent consonants across syllable boundary. In other words, the consonant at the left-hand side of syllable boundary should have higher sonority than the one at the right-hand side. This is to say that a syllable coda is higher in sonority scale than an immediately following syllable onset.

If SyllCon is adopted as an OT constraint in the tableau, the facts of Korean lateralization fall out nicely, as illustrated below:

- (5) /nonli/ → [nol.li] ‘logic’ (D&S 1999: 293)

/nonli/	SyllCon	Max-[lateral]	Max-[nasal]
a. non.li	*!		
b. non.ni		*!	
☞ c. nol.li			*

In the consonant sequence of [n.l] in (5a) which is faithful to the input, the sonority of [n] is lower than that of the following [l], forming a rising sonority contour which is in clear violation of SyllCon. Both remaining candidates (5b, c)

3 Syllable Contact Law: A syllable contact A&B is the most preferred, the less the consonantal strength of the offset A and the greater the consonantal strength of the onset B (Vennemann 1988: 40).

satisfy SyllCon, hence both are passed on for evaluation by the next lower-ranked constraint in the hierarchy, Max-IO[lateral]. The (5b) is taken out of the race by losing the lateral in the input. The (5c) with lateralization incurs the least expensive violation, hence the optimal output.⁴

The data in (3b) pose an apparent challenge to the analysis in (5) above since there surface nasal consonants in spite of the fact that no source of nasal is given in the input. SyllCon turns out to be instrumental in resolving the problem. The following tableau illustrates the situation:

(6) /kjækli/ → [kjəŋni] ‘isolation’ (D&S 1999: 295)

/kjækli/	Syll Con	Ident-Onset [sonorant]	Ident- [place]	Max- [lat]	Max- [nas]	Ident- [son]
a. kjæk.li	*!					
b. kjæk.ni	*!			*		
c. kjəl.li			*!			*
d. kjəŋ.li	*!					*
e. kjəŋ.ni				*		*
f. kjæk.ti		*!		*		*

The ranking and interaction of constraints in (6) makes the input /kl/ surface as [ŋ.n] in the output form, avoiding the violation of the top-ranked constraint SyllCon at the expense of violating low-ranked Ident-IO[sonorant]. This entails that the optimal candidate must be (6e).

However, D&S’s analysis which crucially depends on the work of SyllCon soon runs into a problem. The following tableau, /ln/ as its input sequence, illustrates this:

(7) /pulniŋ/ → [pul.liŋ] ‘inability’ (D&S 1999: 299)

/pulniŋ/	Syll Con	Ident-Onset [sonorant]	Ident- [place]	Max- [lateral]	Max- [nas]	Ident- [son]
⊕a. pul.niŋ						
b. pul.tiŋ		*!			*	*
c. pun.niŋ				*!		
d. pul.liŋ					*!	

4 Park (2006) makes suggestions towards an explanation of /nl/-avoidance in terms of analogy, which I refer the reader to the paper.

(7d) must be the actual output, but it is not the most harmonic candidate. Regardless of the ranking of all the constraints, however, (7a) must be the winner since all the other remaining candidates in (7b-d) are harmonically bounded by it. The main culprit for this wrong decision appears to be that the input sequence is /ln/ (7) not /nl/ as in (5). D&S resolve this empirical problem with additional machinery, introducing another output constraint in the hierarchy. They see this as an effect of the ‘Similarity’ blocking the occurrence of adjacent sonorant coronals, as shown below:

- (8) Similarity – *[+son, +cor], [+son, +cor]⁵ D&S (1999: 300)
 A sequence of coronal sonorant consonants is disallowed.

After all, the intended result of (8) is to prohibit both [l.n] and [n.l] as the outcome. The sequence [l.n] in (7a: [pul.niŋ]) would lead to a violation of Similarity, so (7a) would be less harmonic than (7d). The following tableau portrays the situation with the Similarity ranked on the constraint hierarchy:

- (9) /pulniŋ/ → [pul.liŋ] ‘inability’ (D&S 1999: 300)

/pulniŋ/	Syll Con	Ident- Onset [son]	Simi- larity	Ident- [place]	Max- [lat]	Max- [nas]	Ident- [son]
a. pul.niŋ			*!				
b. pul.tiŋ		*!				*	*
c. pun.niŋ					*!		
d. pul.liŋ						*!	

In a nutshell, what is being claimed by D&S is that lateralization is twofold: the /nl/→[l.l] in (5) is due to the working of SyllCon while the /ln/→[l.l] in (9) is taken care of by Similarity. Now, a natural question that arises is, are we dealing with two different lateralizations in (5) and (9)? No, patently. D&S confront a directionality problem here. This casts very serious doubt on their account of lateralization. Our intuition tells us that (5) and (9) are one and the

5 The motivation of the Similarity as an OT constraint is essentially based on the work of Pierrehumbert (1993). Its unstable status as a universal constraint will be discussed in depth in the next section.

same process and should be explained in a single unified way.

According to Prince and Smolensky (1993, 2004) and McCarthy and Prince (1993), markedness is built into grammars in the form of universal output constraints. Since those constraints are of universal nature, they are to directly state unmarked patterns: ‘syllables are open’ or ‘feet are binary’, etc. Constraints are intrinsically in conflict, but grammars regulate the conflicts through the rankings and interactions of the constraints. In a related vein, it will be argued in the next section that such a state of affairs as caused by Similarity in (8) poses significant empirical and theoretical problems for a standard OT approach.

It is noteworthy that essentially no substantial analyses of Korean manner assimilation since D&S have appeared in which any basically different way of explanation is put into practice.⁶ Kang (2000) also presents an analysis of the phenomena in question, using the constraints in (10). I will detail the inadequacies of this approach. The illustration of his approach is offered in tableau (11):

(10) Kang (2000)’s constraints

- a. [n%l]: the adjacency of nasal and lateral is not allowed.
- b. *_o[l]: a lateral is not allowed in the syllable-initial position.
- c. *[nn]: coronal nasal geminates are not allowed.

(11) /kwənlyək/ → [kwəlyək] ‘power’ (Kang 2000: 227)

/kwənlyək/	[n%l]	*[nn]	* _o [l]
a. kwənlyək	*!		*
b. kwənyək		*!	
☞ c. kwəlyək			*

The tableau in (11) illustrates how the candidate with lateralization is correctly chosen by the constraint hierarchy.

At this point, it is perhaps reasonable to view this style of explanation with

6 To give an example, Kang (2002) admits that D&S’s analysis insightfully explains the Korean manner assimilation phenomena in terms of SyllCon and Similarity. She provides some analyses of additional data involving word structure along the lines of that proposed by D&S, incorporating OO-correspondence in the sense of Benua (1995). But importantly her claim does not lend any new perspectives on the crucial data we are currently dealing with.

some suspicion. Although Kang (2000)'s OT approach seems to work well for these cases, it bears some inherent serious problems that it encounters when the nature of constraints are considered from an OT perspective. Each constraint employed in (11) does not reflect the unmarked status of phonological state of affairs. This means that all the constraints suffer from language-specificity. To cite an example, the top-ranked [n%l] prohibits a sequence of [n] and [l] in either order. Unfortunately, however, this expression as a theoretical characterization gives no insight as to why the sequence in question should be avoided. Also, the other two constraints *[nn] and *_o[l] also suffer from the same language-specificity and do not shed any new light on the phenomena. It goes without saying that postulating such language-specific constraints as these does put a burden on OT grammar which lays emphasis on unmarked status of output constraints.

Lastly, let us consider Sohn (2008)'s treatment of the phenomena. She discusses further consequences of D&S's analysis previously outlined. Let us examine two cases (i) where a morpheme boundary intervenes and (ii) how loanwords behave differently. Continuing to adopt the D&S's framework so far outlined, she adopted SyllCon as it is from D&S. And she proposed SonUni in (12) and employed Max-OO(nas/cod) in (13) as her important pieces of machinery.⁷

(12) Sonority Uniformity (SonUni) (Sohn 2008: 37)
A sequence of alveolar sonorants of different sonority rank is disallowed.

(13) Max-OO(nas/cod) (Sohn 2008: 38)
The feature [+nasal] of an output segment in the coda is realized in the corresponding output.

Consider her tableau in (14) as compared to another one in (15).

⁷ The formulation Max-OO(nas/cod) is originally based on Benua (1997). But the introduction of the OO-correspondence to analyzing Korean lateralization and nasalization is attributed to the insight in Kang (2002).

(14) /imun+lon/ → [i.mun.non] ‘phonology’ (Sohn 2008: 38)

/n-l/	SyllCon	SonUni	Max-OO (nas/cod)	Max-IO (lat)	Max-IO (nas)
a. nl	*!	*			
b. ll			*!		*
c. nn				*	

(15) Marginal speech: /mənLo/ → [məllo] ‘Monroe’ (Sohn 2008: 43)

/n-l/	Son Uni	* _o [l]	*RR	Max- IO(son)	Max- IO(appr)	Max- IO(lat)	Max- IO(nas)
a. nl		*					
b. nr	*!						
c. nt				*!	*		
d. rr			*!				*
e. ll							*
f. nn					*!		

In both tableaux, the SonUni is ranked high enough to heavily influence the selection of optimal outputs.⁸ What is particularly to be noted here is that there is in fact no substantial difference between Sohn’s SonUni in (12) and D&S’s Similarity in (8). These two constraints would share potential problems. I will discuss in depth the problems in the next section. In the tableau (15), in addition, we find *_o[l] and *RR, which are language-specific. These do not carry any explanatory power in OT for the sort of reasons already mentioned in connection with the formulation of Kang (2000)’s constraints in (10).

4. Validity of OT constraints

It has long been recognized that in Semitic languages the verbal root, typically consisting of three consonants (e.g., *ktb* or *qtl*), serves as the skeleton to which vowels as flesh are added in the process of word-formation. This is a

⁸ Sohn (2008: 45) argues that the constraint ranking in (15) is to account for marginal speech form opting for lateral geminate, where OO-correspondence is unavailable. In this case, the total ranking she argues for is as follows: SyllCon, SonUni, *_o[l], *RR » Max-OO(nas/cod), Max-OO(lat/cod) » Max-OO(lat/ons), Max-OO(nas/ons) » Max-IO(son) » Max-IO(appr) » Max-IO(lat) » Max-IO(nas).

well-known case of non-concatenative morphological process. Greenberg (1950) lays out the cooccurrence restrictions to the effect that combinations of homorganic consonants are disfavored. Afterwards, we witness the appearance of a landmark article by McCarthy (1986) in which some anomalous aspects of roots are accounted for by the workings of the Obligatory Contour Principle (the OCP). The OCP is a principle of Universal Grammar. And that was originally proposed Leben (1973) for the purpose of accounting for the fact that like tones cannot be adjacent to each other in tone languages. I will argue in what follows that D&S's Similarity cannot obtain the OCP status of any universal nature, and must be no more than a language-specific constraint.

Pierrehumbert (1993) classified 26 Arabic consonants in terms of five natural classes, as shown below:

- (16) Arabic consonants and natural classes (Pierrehumbert 1993: 369)
- | | |
|--------------------------|-----------------------------------|
| a. Labials | {b, f, m} |
| b. Coronal Sonorants | {l, r, n} |
| c. Coronal Obstruents | {t, d, s, z, T, D, S, Z, θ, ð, š} |
| d. Dorsal Obstruents | {k, g q} |
| e. Guttural approximants | {χ, ʁ, h, ʕ, h, ?} |

Most importantly, the OCP effect takes place within each of the five categories. The OCP could be invoked in dealing with relevant forms by treating such four targeted major place features as [labial], [coronal], [dorsal] and [pharyngeal] as privative on separate tiers.

Adjacent like specifications of Coronal Sonorants in (16b) are also disfavored. What is of interest is that we witness a special pattern in Arabic. That is, the Coronal Sonorants in (16b) co-occur freely with the Coronal Obstruents in (16c) (Pierrehumbert 1993: 369). This means that since no contravention of the OCP occurs between these two categories, the OCP cannot be defined on [coronal] tier. McCarthy (1988) proposed an analysis in terms of underspecification by treating the Coronal Sonorants (but not Coronal Obstruents) as underlyingly placeless on the [coronal] tier. For this reason, they are made invisible at the stage of the evaluation by the OCP on the [coronal] tier. By so doing, such an analysis would lead us to expect that the failure of the Coronal Sonorants [l], [r],

and [n] to combine with each other is attributed to the role of a redundancy rule. And this expectation can be borne out by regulating at what stage of the derivation the feature-filling rule will be applied. If we try to translate McCarthy (1988)'s insight on the underspecification⁹ into an OT constraint, however, we come up with a language-specific constraint. In what follows I will try to make explicit the reasoning that might lead to the adoption of D&S's Similarity.

Another example of the same sort is Korean. As illustrated in (17) below, coronal sonorants and coronal obstruents freely co-occur within roots in Korean.

(17) Failure of the OCP in Korean coronals

[sɔ.l.dan] 'coronal', [kwan.sa] 'article', [ka.l.dɛ] 'reed', [sul.saj] 'a drinking table', [kwan.dɛ] 'tolerance', [wul.ta.ri] 'fence', [on.taŋ] 'hot water'

As we have seen, this pattern is exactly what happens in Arabic. Having established this, a question arises as to why Korean displays the same behavior of prohibiting such adjacent coronal sonorants [l.n] or [n.l] like Arabic. D&S attributes it to the workings of an OT constraint Similarity. But I claim that the Similarity cannot be a markedness constraint reflecting the unmarked aspects of linguistic affairs but a language-specific constraint putting a burden on our grammar. Of course, it would be inevitable in constructing an OT grammar that every grammar has certain set of language-specific constraints. But every language-specific constraint comes at a cost while universal constraints come for free. According to the OT interpretation, the phonological consequences of any cost are determined by constraint ranking. Therefore, we need to preserve the set of language-specific constraints at a minimum cost.

Going back to the discussion in the preceding paragraph, introducing D&S's Similarity in the tableau might seem to handle the avoidance of [l.n] or [n.l] sequences in Korean, apparently. Unfortunately, however, the Similarity cannot be a universal markedness constraint. D&S's Similarity which forbids adjacent [+son, +cor] specifications is reasonably argued to be an output constraint of language-specific nature, which puts a burden on individual grammar. In a sense, the Similarity is as good as arbitrary *ln or *ln not to mention Kang

⁹ A central goal of underspecification theory is to eliminate all redundancy from underlying representations (Kiparsky 1982; Archangeli 1984, among others).

(2000)'s [n%l] in (10). If any OT analysis employs language-specific constraints as main constraints, it no longer retains its explanatory power in the spirit of OT.¹⁰ Instead of offering an answer to why lateralization or nasalization occurs, previous analyses attribute it to constraints prohibiting such a sequence of coronal sonorants as [l.n] or [n.l]. This would be like saying that the reason why [l.n]- or [n.l]-sequence is not allowed in Korean is because they are prohibited in the first place. Such an approach, therefore, explains nothing in a fundamental way about why manner assimilations occur. The reason is that what should be explained is in fact incorporated in the constraint itself. It reveals nothing about markedness or the functioning of Korean phonology. So, we are back to the drawing board.

To summarize the discussion so far, D&S introduced SyllCon to forbid the [n.l]-sequence in (5a: [non.li] 'logic'), which led to lateralization to improve on the rising sonority contour. This step immediately turned out to be problematic since the [l.n]-sequence in (7a: [pulniŋ] 'inability') has a falling sonority contour satisfying SyllCon but is not optimal. This is where the Similarity comes in. After all, the SyllCon can safely be claimed to be a universal OT constraint on the grounds that a falling sonority across the syllable boundary is to reflect an unmarked status of phonological affairs. The fact that SyllCon is responsible for prohibiting only [n.l] not [l.n] casts very serious doubt on the SyllCon-based account. Once again, our intuition says that they are one and the same phenomenon. This amounts to saying that the SyllCon is not the right constraint here even though it is perfect in its phonological status of universality. And the Similarity as a rescue plan also turned out to be a burdensome language-specific constraint. On top of this, SyllCon is designed to assign a violation mark to [n.l] while Similarity to [l.n] as well as [n.l]. Here we have an overlapping function of SyllCon and Similarity in the constraint evaluation.

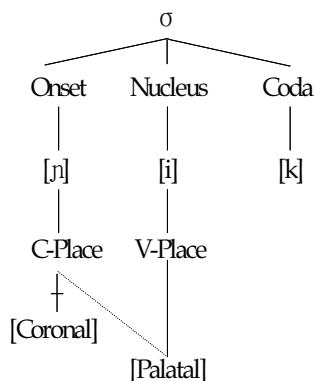
5. Proposal

To gain a more accurate view of the current situation, let us begin by

10 ... The best practice in OT is to state constraints in very general ways and then try to limit their activity through interaction with higher-ranking constraints... (McCarthy 2008: 25)

considering the /n/-deletion data under Initial Law, as given in (1a) earlier.¹¹ In the case of *’/nik-mjəŋ/ → [ik.mjəŋ]’*, the word-initial /n/ before /i/ is supposed to undergo palatalization and turned into [ɲik.mjəŋ]. As a result of the derivation, a partial geminate is formed which shares the [Palatal] V-place in word-initial position. Based on Clement (1991)’s proposal on the segregation of place features of consonants and vowels, the situation can be depicted as follows:

(18) Result of palatalization as a partial geminate



A potential clue to the nature of Initial Law may well be provided by an already-established idea. I propose that we slightly modify and extend Prince and Smolensky (2004)’s **Complex*¹² in such a way that more than one place feature is not allowed in any syllable position node. As a result of [Palatal] V-Place spreading in (18), the syllable onset [ɲ] gets to be counted to possess two place specifications: [Coronal] C-Place and [Palatal] V-Place. I argue that the configuration incurs a violation of **Complex*. My interpretation is of (18) is that the strategy to satisfy **Complex* in Korean is to delete [ɲ], hence we get [ik.mjəŋ] as the actual output.^{13,14}

11 D&S and other subsequent treatments do not consider Initial Law in their analyses.

12 **Complex*: No more than one C or V may associate to any syllable position node. (Prince and Smolensky 2004: 96)

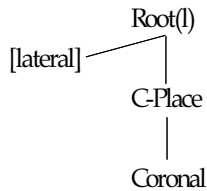
13 A more detailed discussion of the word-initial /n/-deletion is beyond the scope of this paper which focuses on /l/~n/ alternation. So I will not discuss it any further.

14 The other data in (1a) (e.g., /ɲjə-ʃa/ → [jə.ʃa], /ɲjo-lo/ → [jo.ro], /ɲju-tæ/ → [ju.dæ]) are also

Let us now turn to another aspect of Initial Law, according to which an underlying /l/ is realized as [n] word-initially as in (1b). Unlike the /n/-deletion approach, I assume a situation in which a word-initial [l] is licensed by an adjacent consonant at the immediately preceding syllable. Or to put it in plain prose, I will argue that all the facts of manner assimilation fall into place on the assumption that the Korean [lateral] on its own is incapable of surviving without an aid from a neighboring consonant.

Based on the idea that a word-initial [l] is in need of some help to surface, I posit the phonological representation of /l/ as follows:

(19) Phonological representation of /l/



The [lateral] in (19) cannot be licensed by the dominant Root node but must be licensed by being associated to a neighboring consonant. What we need is one reasonably-formulated constraint to express this limitation within the constraint-based framework of OT. Something along the lines of (20) is what we need:

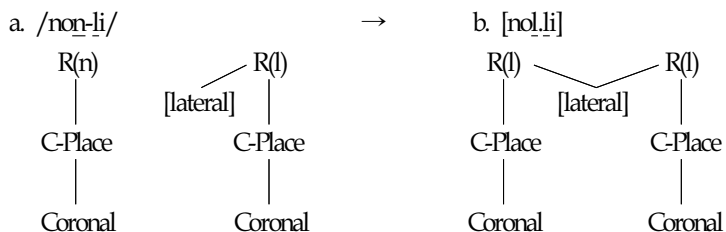
(20) LICENSE([lateral])

A syllable-initial [lateral] must not be dominated by a single association line.

In order for the [lateral] to surface, the LICENSE([lateral]) in (20) requires that it should be associated to some other consonant than the one that dominates it. The following picture portrays a typical situation:

word-initial /n/-deletion cases. What is especially intriguing about all these cases is that their surface manifestations are heavily influenced by the presence of /i/ or /j/ in the syllable nucleus. That is, the underlying /n/ must have been palatalized and then deleted in satisfaction of *Complex. This constitutes a strong evidence for the relevance of palatalization with the word-initial /n/-deletion phenomenon.

(21) Lateralization and gemination of [lateral]



The syllable-initial [lateral] in (21a) is singly associated to its dominating Root node in violation of LICENSE([lateral]), so it cannot be licensed. In (21b), on the other hand, the [lateral] is realized by being doubly-linked with the preceding consonant in satisfaction of LICENSE([lateral]).

Last but certainly not least, I will employ in my analysis a faithfulness constraint which disfavors sonority difference between input and output segments.

(22) FAITH-[sonority]

Sonority of input sonorant consonants should be identical with that of output consonants.

(22) assigns (a) violation mark(s) for every output segment that deviates in degree of sonority from its given input sonorant consonants. A good strategy to ensure this is to mark violations gradually in terms of a sonority scale like (23):

(23) Sonority scale (Hogg and McCully 1987: 33)

Sounds	Sonority values	Examples
low vowels	10	/a, ʌ/
mid vowels	9	/e, o/
high vowels	8	/i, u/
flaps	7	/r/
laterals	6	/l/
nasals	5	/n, m, ŋ/
voiced fricatives	4	/v, ð, z/
voiceless fricatives	3	/f, θ, s/
voiced stops	2	/b, d, g/
voiceless stops	1	/p, t, k/

6. Analysis

I continue to adopt the strategy that phonological processes are best explained through the interaction of well-defined output constraints rather than language-specific constraints themselves. The introduction of LICENSE([lateral]) and FAITH-[sonority] offers a new prospective for the analysis of manner assimilation in Korean.

Let us begin with an aspect of Initial Law in which a word-initial [l] gets deleted in surface. The relevant candidates are compared in the following tableau:

(24) /lak-jəp/ → [na.kjəp] ‘fallen leaves’

/lak-jəp/	LICENSE([lateral])	FAITH-[sonority]
a. <u>l</u> a.kjəp	*!	
^{LS} b. <u>n</u> a.kjəp		*
c. a.kjəp		**!

The faithful candidate (24a) has a word-initial [l] whose phonological representation is like the one in (19). The [lateral] here is unable to survive unless the feature has a chance to be saved by being linked to a licenser. So (24a) is now taken out of the race by LICENSE([lateral]). The word-initial [l] in question can find a way to avoid the violation of LICENSE([lateral]) by adjusting its sonority value. That is because the [l] has no other adjacent consonant to get itself licensed. Fortunately, lowering its sonority value by just one step in (23) would make the /l/ surface as [n], avoiding the violation of the top-ranked constraint. Of the remaining candidates, the one with syllable-initial [n] incurs the least expensive violation of FAITH-[sonority]. The optimal output is therefore decided to be (24b).^{15,16}

15 In my tableaux of this section, I assign one violation mark to a candidate with just one step unfaithfulness to the input sonorant consonant based on (23). And I assign two violation marks to any candidates with more than one-step deviation in sonority scale. On the contrary, (22) requires that every input obstruent vacuously satisfy the FAITH-[sonority].

16 FAITH-[sonority] assigns two violation marks to (24c) because the input /l/ corresponds to zero (i.e., silence) in the output. Concerning (24c), the deletion of the word-initial /l/ results in silence which corresponds to the sonority value of zero. And this is counted as more than one-step decrease along the sonority scale, hence two violations of FAITH-[sonority].

Let us now consider a case in which there exists a consonant to rescue the /l/ from an unlicensed position. With a view to rescuing the /l/, lateralization occurs in (25):

(25) /nonli/ → [nɒ.li] ‘logic’

/nonli/	LICENSE ([lateral])	FAITH- [sonority]	SyllCon	MAX (lat)	MAX (nas)
a. non.li	*!		*		
b. non.ni		*		*!	
☞ c. nɒ.li		*			*

The syllable-initial [l] in (25a) does not get any support from the neighboring consonant and so fails to license on its own the unstable feature [lateral], in violation of LICENSE([lateral]). (25b) lowered the sonority of the input /l/ along the scale by one step while (25c) made the input /n/ surface as [l] by raising the sonority by one step. Each of them receives one violation mark from FAITH-[sonority] as they both are one step away from the degree of sonority given in the input. The constraint ranking dictates that it is a higher priority to preserve [lateral] than it is to keep [nasal]. So (25c) with lateralization is decided to be optimal.

The following tableau accounts for the surprising fact that a nasal consonant shows up out of nowhere in the output:

(26) /kjək-li/ → [kjəŋ-ni] ‘isolation’

/kjək-li/	LICENSE([lateral])	FAITH-[sonority]	SyllCon	...
a. kjək.li	*!		*	
b. kjək.ni		*	*!	
c. kjəŋ.li	*!	*	*	
☞ d. kjəŋ.ni		*		
e. kjək.ti		**!		

Three major candidates remain after excluding (26a, c) which violate top-ranked LICENSE([lateral]). As for (26e), the input /l/ decreases its sonority value shown in (23) by four steps and is realized as [t], hence two violations from FAITH-[sonority]. Note that (26d: [kjəŋ.ni]) incurs only one violation of

FAITH-[sonority]. The [ŋ] from /k/ does not get penalized from FAITH-[sonority] as the input /k/ is an obstruent not a sonorant consonant. So, the [ŋ] vacuously satisfies FAITH-[sonority]. But since the output [n] in syllable onset position resulted from the input sonorant consonant [l], we witness a one-step decrease in sonority value. For this reason, (26b, d) incurring the minimal violation along the sonority scale tie on FAITH-[sonority]. SyllCon penalizes the former that has a rising sonority contour. Therefore, (26d) turns out to be victorious. This is how the input sequence /kl/ came to take on a rather different appearance like [ŋ.n] in the optimal output.¹⁷

From a theoretical point of view, the main merit of the current analysis is that it enables us to arrive at a more unified explanation for lateralization in Korean. That is, the symmetrical nature of lateralization is captured with the interaction of LICENSE([lateral]) and faithfulness constraints. The following tableau shows how the input sequence /ln/ changes to [l.l] with the same machinery as in (25) above:

(27) /pul_lniŋ/ → [pul_lliŋ] ‘inability’

/pul _l niŋ/	LICENSE ([lateral])	FAITH- [sonority]	SyllCon	Max-IO (lateral)	Max-IO (nasal)
a. pul _l niŋ	*!				
b. pul _l tiŋ	*!	**			
c. pul _l niŋ		*		*!	
d. pul _l liŋ		*			*

According to the sonority scale in (23), [l] and [n] only differ in a single step of sonority. It therefore comes as no surprise that FAITH-[sonority] assigns one violation mark to each of (27c, d). Max-IO(lateral) plays a crucial role in selecting the latter as the actual output.

One final question which remains to be answered is why nasalization instead

17 I do not include a candidate with lateralization like [kjə_lli] for evaluation in the tableau (26). That is because it also means that the input dorsal /k/ has to be place-assimilated by the following coronal /l/, which is very unlikely cross-linguistically. I assume that it is higher priority in Korean to preserve place than licensing the [lateral] in question. A high-ranking faithfulness constraint (e.g., FAITH(place)) would play a role in preventing the dorsal /k/ from undergoing lateralization. For this reason, a syllable-final lateral does not induce lateralization of the following dorsal or labial consonant (e.g., [dʒul_lgi] ‘stem’ and [sə_lbim] ‘NewYear’s’).

of lateralization takes place in (2c). In case a morpheme boundary intervenes, the input /n+l/ sequence undergoes nasalization into [n.n]. An examples illustrating this pattern is given in (28) below:

(28) /imun+lɔn/ → [i.mun.nɔn] ‘phonology’

/n+l/	Max-OO (nas/cod)	LICENSE ([lateral])	FAITH- [sonority]	SyllCon	...
a. n.l		*!			
b. l.l	*!		*		
c. n.n			*		

There is a phonological sense in making such a distinction between /nl/ and /n+l/. In tableau (28), I adopt Max-OO(nas/cod) introduced in (13) as the topmost constraint in the current hierarchy. The input /n/ in the free morpheme /imun/ is preserved both in (28a, c). But only the latter is selected to be optimal because it vacuously satisfies LICENSE([lateral]).¹⁸

If the order is reversed from (28), nasalization is correctly excluded and what we get is lateralization. This is exactly what is predicted by current hierarchy as shown in (29):

(29) /səl+nəl/ → [səl.ləl] ‘New Year’s Day’

/l+n/	Max-OO (lat/cod)	Max-OO (nas/cod)	LICENSE ([lat])	FAITH- [son]	Syll Con	...
a. l.n			*!			
b. l.l				*		
c. n.n	*!					

Both candidates (29a, b) satisfy Max-OO(nas/cod), hence both are passed on for evaluation by the next-lower-ranked constraint in the hierarchy, LICENSE([lateral]). The latter is selected for the optimal output as it has no violation of the constraint.¹⁹

¹⁸ It has been pointed out by an anonymous reviewer that the optimal output can vary depending on dialectal or generational differences: [i.mun.nɔn] or [i.mul.nɔn]. From a perspective of OT grammar, these kinds of differences basically reduce to different languages and can be accounted for in terms of the re-ranking of relevant constraints.

¹⁹ Given the apparently identical input sequence of /ln/ as in (25: /nonli/), it might come as

7. Conclusion

A prime motivation for this article was the observation that the feature [lateral] is not allowed word-initially in Korean, which is typically called 'Initial Law'. I began with searching for a phonologically adequate reason for that from an OT perspective and finally arrived at a more unitary theory of manner assimilation as a whole in Korean. Admittedly, D&S's SyllCon is entitled to make an OT universal constraint but I claimed that it has a limitation in capturing our linguistic intuition of Korean: it fails to explain the symmetrical nature of lateralization between [n] and [l] in output forms. SyllCon is argued to be active in selecting output [l.l] sequence only from input /nl/. To resolve the problem of deriving [l.l] from /ln/, D&S had to introduce another constraint 'Similarity' in their analysis. Not to mention the SyllCon's failure in capturing our intuition on the bi-directionality of lateralization, I noted that the formulating and positing the Similarity is *stipulative* rather than *explanatory* (i.e. it does not offer us any account of why a sequence of sonorant coronals is disfavored, if it does not invoke the OCP violation). I attempted to overcome this obvious limitation in their analysis and subsequent literature by proposing the LICENSE([lateral]), with the universal status of SyllCon preserved on the other hand. LICENSE([lateral]) requires that a syllable-initial [lateral] need to be licensed by an adjacent consonant. This constraint has proved to provide insight into the nature of manner assimilation as a whole in Korean. This article can therefore be viewed as an attempt to show how this constraint can be brought to bear on long-standing Initial Law and manner assimilation problems. All available evidence converges to show that the current analysis in fact provides fundamental explanations for them. It is significant then that such a simple and natural strategy allows us to preserve the optimality theory of phonology at a minimum cost. After all, this line of strategy should be the right track our phonological analysis should be on.

surprise that (29) produces the opposite result. However, it should be taken into account that OO-correspondence is activated only in the latter since an independent word (i.e., /səl/) serves as the morphological base of the complex word.

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