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RESEARCH

Lexical integrity and suspended affixation in two types of denominal predicates in Korean

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Central to the debate on the demarcation of morphology and syntax is the position staked out by the Lexicalist Hypothesis, which holds that morphology and syntax are distinct systems which interface with each other in a particular way. Proponents of the Lexicalist Hypothesis point to a suite of diagnostics collectively known as *lexical integrity* tests (Bresnan and Mchombo 1995) as evidence pointing to the fundamental difference between morphology and syntax. The tests revolve around the apparent failure of principles of phrasal syntax at the threshold of words. If morphology and syntax constitute a unified rule system, as assumed in current approaches such as Distributed Morphology, such failure is not predicted. It is surprising therefore that lexical integrity has not played a significant role in arguments for Distributed Morphology (Lieber and Scalise 2007). The purpose of this paper is to introduce two types of denominal predicates in Korean, which are distinguished by the fact that lexical integrity is observed in one but not the other type. I explore how the behaviors of the two classes of denominal predicates can be modeled using the theoretical and empirical machinery of current DM, in particular, the distinction between roots and words. While this is a welcome result, it turns out that DM predicts that more languages should behave like Korean in allowing massive violations of lexical integrity. I provide an analysis of the differences between languages like Korean that allow selective access of word-internal structure by syntactic principles and languages like English where such access is prohibited by focusing on the mechanics of Vocabulary Insertion and complex head formation. The paper concludes with the implications of the analysis of the two types of predicates in Korean for both lexicalist and DM architectures of morphology and syntax interaction.

Keywords: denominal Predicates; Distributed Morphology; lexical integrity; suspended affixation; vocabulary insertion

1 Introduction: Lexical integrity and the Lexicalist Hypothesis

The Lexical(ist) Hypothesis (LH, hereafter) holds that morphology and syntax are distinct sub-systems of grammar that interface with each other in a restricted manner. A succinct statement of the leading idea behind the LH is given in the quote below:

(1) "The Lexical Hypothesis is about the organization of the grammar into modules. It suggests that the system of words in a language is independent of the system of phrases in a language in a particular way. It is independent of it, but communicates with it through a narrow channel—the "top-level" properties of words […]. Now either this is *not* the situation, or we need something like the Lexical Hypothesis." (Williams 2007: 354)

The above quote characterizes the LH as an empirical claim about how morphology and syntax relate to each other, rather than as a position borne out of theoretical or methodological prerogatives.[1]

Proponents of the LH often point to a suite of diagnostics collectively known as *lexical integrity* (LI) tests as evidence pointing to the limited, unidirectional, interaction of morphology and syntax, and by implication, to the autonomy of the two systems. The tests revolve around the apparent failure of principles of phrasal syntax to penetrate into morphologically complex words. If morphology and syntax constitute a unified system (as in Distributed Morphology (DM) or theories like Lieber (1992), the impenetrability of word-internal structure to principles regulating structure above the word is not predicted. A widely cited work on LI tests is Bresnan & Mchombo (1995; B&M hereafter). This work therefore constitutes the starting point of our discussion.

The contrast in (2) shows that the LI test that B&M call (*phrasal*) *extraction* cannot target word-internal constituents. Note that since extraction targets a constituent within a compound, the unacceptability of extraction cannot be blamed on the stranding of bound forms upon extraction.

(2) a. American history, which they have been teaching _ for years, (is no longer a requirement at the school.)
b. *American history, which they have been _-teachers for years, (is no longer a requirement at the school.)

Likewise, gapping fails to target word-internal constituents.

(3) a. John under-estimated Bill, and Mary _ Paul.
b. *John under-estimated Bill, and Mary over-_ Paul.

B&M also contend that productive coordination is unattested within words.

(4) a. Mary out-ran and out-swam John.
b. *Mary out-[ran and swam] John.

The failure to expand word-internal constituents by productive coordination is of a piece with the failure to have external modifiers of word-internal constituents (cf. (5)). B&M dub this LI test the failure of phrasal recursivity within words. Both are taken by B&M to indicate the lack of productive syntactic recursion within words.[2]

[1] In fact, given that morphology and syntax share many properties (DiSciullo & Williams 1987), LH is not the null hypothesis. Unified theories of morphology-syntax, such as Distributed Morphology (Halle & Marantz 1993), or Lieber (1992), are closer to the null hypothesis, as Embick & Noyer (2007) correctly point out.

[2] Some remarks are needed on phrasal recursivity. First, phrasal recursitivity needs to be distinguished from the superficially similar bracketing paradoxes (e.g., *transformational grammarian*). The reason is that there is nothing unusual about the external syntax in the case of bracketing paradoxes (where an Adj *transformational* modifies a noun *grammarian*). This means that bracketing paradoxes can be handled through elaborating the form-meaning interface (Spencer 1988; Beard 1991). By contrast, when phrasal recursivity is violated, the external syntax of the resulting structure is deviant. For example, in (i) below, a genitive-marked possessor, which is a nominal modifier, occurs with a predicate (verb/adjective), and yet the structure is well-formed.

(i) (pro) Cheli-**uy** tongsayng-kath-ta
(he) C-GEN brother-be.like-DECL
'(he) looks like Cheli's brother.'

In other words, phrasal recursivity violations like (i) display a morphology-syntax mismatch and not a morphology-semantics mismatch. In evaluating LI tests, we should focus on those that instantiate morphology-syntax mismatches. For example, it is conceivable that anaphoric islands pertain to the

(5) a. *[quite happi]-ness
b. *[really glad]-ness

Word-internal anaphoric elements cannot take antecedents outside the word (cf. (6a) vs. (6b)). This is the test of *inbound anaphoric islands*.[3]

(6) a. *Reagan$_i$ addressed a meeting of [him$_i$-ites].
b. Reagan$_i$ addressed a meeting of [his$_i$ supporters].

On the other hand, the difficulty of word-internal constituents to function as antecedents of anaphoric expressions outside the word (Outbound Anaphoric Islands, cf. (7a) vs. (7b)) is in general taken not to be a valid LI test (Harris 2006b and references therein) and does not happen to be among B&M's suite of LI tests either. Nevertheless, we include it here, as the contrast between Inbound and Outbound Anaphoric Islands will figure in our subsequent discussion.

(7) a. ?[Reagan$_i$-ites] still honor his$_i$ legacy.
b. Supporters of Reagan$_i$ still honor his$_i$ legacy.

The theme of the special volume is a phenomenon called *suspended affixation* (abbreviated SA hereafter), a term coined in Lewis (1967) for Turkish. Though SA is not considered a usual LI test, SA is not predicted from the perspective of the LH, as it involves an affix attached to a word/head in a single conjunct of a coordinate structure that has the entire coordination in its scope. An example of SA from Turkish is provided below, with the scope of the suspended suffixes indicated by the bracketing.

(8) [Zengin ve ünlü]-**y-dü-m**.
rich CONJ famous-COP-PST-1SG
'(I) was rich and (I was) famous.'

Under the assumptions of LH, an affix that is attached to a word/head of a single conjunct is not expected to exert its influence on the entire conjunct, but only on the immediate word to which it is attached (cf. (4)). This expectation is not met in SA. SA thus bears on the question of whether the position staked out by the LH on how morphology and syntax interact is correct. Hence, it is quite appropriate to discuss SA in the broader context of a claimed set of LI tests and LH.

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morphology-semantics interface. Similarly, some instances of gapping of word-internal constituents may implicate the morphology-prosody interface (Booij 1985). On the other hand, the tests of extraction, coordination, and phrasal recursivity seem to involve syntactic principles failing at or below the threshold of words, and thus implicate the morphology-syntax interface. In drawing conclusions about the nature of the morphology-syntax interface, we need to focus on those that genuinely implicate the morphology-syntax interface. Thanks to a reviewer for this observation.

A second point about phrasal recursivity is the following, brought up by another reviewer. While B&M took phrasal recursitivity to be a valid diagnostic separating word-internal and phrasal structure, the existence of phrasal compounds (as in [[**sit on the sidelines**] policy]), where non-lexicalized syntactic phrases occur productively as part of words (Ackema & Neeleman 2003; Sato 2010, etc.), cast doubt on the supposition that phrasal structure cannot exist below the level of the word. If there is no ban on sub-word phrasal structure, the ill-formedness of (5a, b) must be due to a condition that bans word-internal elements from being modified by constituents outside the word, that is, (the ban on) *external modification* (Harris 2006a). I will therefore use the terms phrasal recursivity and external modification interchangeably in the remainder of the paper to refer to the possibility of external modification of word-internal constituents, which is allowed with transparent predicates but not with opaque predicates.

[3] A possible instance of inbound anaphora in English is *self*-prefixation, though Williams (2007) argues that the reference resolution of *self* within words is different from that of reflexives in phrasal syntax. See Harris (2006b) for additional discussion on anaphoric islands.

Phenomena akin to SA are quite widespread in Korean and Japanese morphosyntax. Much has been written on the proper characterization of SA-like phenomena in the two languages as well as on the implications about morphosyntax that follow from the analyses of these phenomena. Thus, the denominal predicates that constitute the subject matter of this paper are by no means the only morphosyntactic constructs in the language that allow SA.

For example, certain verbal inflectional affixes (marked in bold) allow SA, as shown below (J-M Yoon 1990; M-K Park 1994; J. Yoon 1994; 1997):

(9) a. Sip-nyen-cen John-un kananhay-ss-ko pichamhay-ss-**ta.**
10-years-ago J-TOP poor-PST-CONJ miserable-PST-DECL

b. Sip-nyen-cen John-un [kananha-ko pichamhay]-**ss**-**ta.**
10-years-ago J-TOP poor-CONJ miserable-PST-DECL

c. *Sip-nyen-cen John-un kananhay-**ss**-ko pichamha-ta.
10-years-ago J-TOP poor-PST-CONJ miserable-DECL
'10 years ago, John was poor and miserable.'

The past tense suffix (*-(e)ss-*) may occur on both verbs in a conjoined structure (cf. (9a)), or on just the verb of the final conjunct, in which case the event denoted by the verb of the non-tensed initial conjunct (carrying the affixal conjunctive marker *–ko*) is interpreted under the scope of the tense that occurs on the final conjunct (cf. (9b)). This pattern of tense-marking can be analyzed as an instance of SA, where the tense suffix combines with a conjoined VP, taking scope over it, as indicated by the bracketing in (9b). The fact that such asymmetric tense-marking is allowed only on the verb in the final conjunct (cf. (9b) vs. (9c)) is expected, since only a suffix attached to the final conjunct verb can scope over a conjoined VP in a head-final language like Korean. In the relevant literature, the pattern where all verbs are inflected (cf. (9a)) is viewed as instantiating a different type of conjunction (at the TP level), based on a number of asymmetries between tensed and tenseless initial conjuncts (J. Yoon 1994; 1997; Takano 2004). In addition to verbal inflection, SA is attested with suffixal nominalizers (J. Yoon 1996), nominal inflectional particles (J. Yoon 1995; 2005; Yoon & Lee 2005), and certain nominal derivational suffixes (H-B Im 1989; J. Yoon 2008) in Korean.[4]

In this paper we investigate the properties of denominal predicates in Korean with respect to the proposed tests of LI, including SA, and explore the implications of the proposed analysis for theories of morphology-syntax interface. As we shall see in Section 2, denominal predicates in Korean can be divided into two types, depending on the denominalizing suffix involved. In predicates derived with the first type of denominal suffix, the internal composition of the predicates is opaque to syntax, as diagnosed by LI tests. However, in predicates derived with the second type of affix, it is not. With the exception of extraction and gapping of the base, all tests of LI can be violated in this type of derived predicate. This state of affairs poses a *prima facie* challenge to theories that adopt the LH as well as to theories like DM that posit that morphology and syntax constitute a single

[4] The non-equivalence of coordinate structures where conjuncts are separately tense-marked and those where tense is marked only on the final conjunct, yielding SA, implies that deletion of morphemes from the non-final conjunct is not a viable analysis of SA in (9b), though it may be the right analysis in some languages. See Erschler (this volume) on a deletion analysis of SA in some Turkic languages, as well as Booij (1985) and Artstein (2005) on deletion analyses of word-internal coordination.
Note that the clause type (mood) suffix in (9) can only occur on the final conjunct. This can be explained if the coordinated constituents are TPs (=9a) or vP (=9b), while mood heads CP, which takes TP as its complement. Full CP coordination with mood morphemes on each conjunct is possible only with the analytic coordinator *kuliko* 'and'.

system. The challenge to the former is that the prediction that word-internal structure should be opaque to syntax is not fully supported in Korean. Conversely, the fact that LI holds for some derived predicates in Korean constitutes a challenge for unified theories of morphosyntax like DM, under which we expect word-internal structures to be visible to syntactic principles, all other things being equal.[5]

The goal of this paper is to account for the selective transparency of word-internal structure to syntax in two types of denominal predicates in Korean within an approach that shares key assumptions with DM.[6] Building on the distinction between Root versus Word-based word-formation, I will show (Section 3) that a 'single engine' approach to morphology-syntax that does not posit morphology as a generative system orthogonal to phrasal syntax can model the differences between the two types of derived predicates with respect to LI tests.

The proposal works nicely for the Korean data. However, the overall architecture of grammar in DM predicts that LI violations should be attested on a much wider scale in all languages, since morphology and syntax are assumed to be hewn out of the same fabric in all languages. This prediction is not upheld (Section 4). Recognizing that what conspires to make a large part of morphology transparent to syntax in languages like Korean is the strict head-final character of its syntax and morphology, the paper locates the key to the difference between Korean and other languages in terms of how *vocabulary insertion* operates (Section 5). Word-internal opacity arises when vocabulary insertion takes place after complex head formation. In languages where both morphology and syntax are rigidly head-final, vocabulary insertion can take place without complex head formation. In such cases, the internal structure of a surface 'word' remains permeable to syntactic principles, resulting in robust violations of LI.

The paper concludes (Section 6) with a discussion of the implications of the proposed analysis for different architectures of the morphology-syntax interface.

2 Two types of denominal predicative suffixes in Korean and lexical integrity tests

A handful of suffixes can attach to nominal bases and yield predicative (that is, verb or adjective) categories in Korean. The following is a representative list of such suffixes. The suffixes are presented first, followed by representative derived predicates containing them. The meanings of the predicates are at best approximations, and the translations do not do justice to the subtle shades of meaning differences among the predicates. The meanings of some bases are difficult to pin down, in which case we use a question mark in the gloss.[7]

[5] A reviewer notes that the DM architecture does not predict that morphology and syntax will be completely alike, since there are computations specific to morphology. While the point is valid, operations specific to morphology take place 'after syntax' in DM (Bonet 1991; Arregi & Nevins 2008). Therefore, these operations should not affect relationships established earlier in the syntactic derivation, which is what Ll tests are about.
Take phrasal recursivity/external modification as an example (cf. (5a, b)). Under DM assumptions, the modification of *happy* by *quite* in (5a) is established before *happy* becomes part of the word *happi-ness* in the derivation. However, the modification relationship must be blocked when complex head formation takes place. Unless we posit a post-syntactic principle that specifically stipulates this (which would be tantamount to stipulating LI), there is no reason why modification of word-internal constituents should fail.

[6] For an analysis of facts similar to those discussed here couched in modified lexicalist terms, see Kim, Sells & Westcoat (2008). For reasons of space, I shall not engage in a comparison of lexicalist vs. non-lexicalist analyses in this paper.

[7] A productive way of forming denominal predicates in Korean is with the formative *ha-* (*kongpwu-ha-(ta)* 'study', *coyong-ha-(ta)* 'be quiet', etc.). Since *ha-* is not a suffix but a stem, this class of denominal predicates is formed by compounding. Therefore, I do not deal with it here.
Another formative that occurs productively in denominalization is the copula *–i-*, which is clearly not a stem but a suffix (or a clitic). However, I have chosen to leave it out of discussion in this paper because there is much literature on the copula. The properties of transparent suffixes are largely identical to those of the affixal copula, as readers familiar with the literature on the copula can tell.

(8)

-ci-:	'be characterized by'	*kunul*('shade')-*cita*	'get/be shady'
		mith ('bottom')-*cita*	'suffer loss'
-lop-:	'be characterized by'	*hay*('harm')-*lopta*	'be harmful'
		hyangki('fragrance')-*lopta*	'be fragrant'
-mac-:	'give impression of'	*iksal*('humor')-*macta*	'be humorous'
		nungcheng('guile')-*macta*	'be deceitful'
-tay-:	'act in X manner'	*chollang*('?')-*tayta*	'be frivolous'
		cwung.el('?')-*tayta*	'grumble, murmur'
-keli-:	'act in X manner'	*me.mwus*('?')-*kelita*	'hesitate'
		tempeng('?')-*kelita*	'be careless, clumsy'
-sulep-:	'be suggestive of'	*salang*('love')-*sulepta*	'be lovely'
		iksal ('humor')-*sulepta*	'be humorous'
-tap-:	'be worthy of'	*ceng*('affection')-*tapta*	'be affectionate'
		namca('man')-*tapta*	'be manly'
-kath-:[8]	'be/act like'	*papo*('fool')-*kathta*	'be foolish'
		kwunin('soldier')-*kathta*	'be/act like a soldier'

The suffixes differ in terms of productivity. Derived predicates containing *–tap-* and *–kath-* occur with high frequency, with a large number of distinct bases. Among the rest, *-sulep-* is more productive than the others, as can be gauged by the number of hapaxes that show up in text searches. By contrast, the suffix *–lop-*, which is similar in meaning to *–sulep-*, occurs with just a handful of fixed bases. Productivity also correlates with semantic compositionality. While the meaning of denominal predicates containing *–kath-* and *–tap-* is compositional, the meaning of predicates containing other suffixes can be idiosyncratic (as in *mith-cita* above).

The suffixes do not just differ in terms of productivity. They can be divided into two types according to the ability of the derived words containing them to admit LI violations. In what follows, I will use predicates containing the suffix *–ci-* to illustrate the properties of one type, contrasting their behavior with those containing the suffix *–tap-* , which represents the other type.

First, with regard to the test of conjoinability, *-ci-* cannot attach to nominal bases (or noun phrases) that are conjoined (cf. (11a) vs. (11b)), while it is possible for *–tap-* to attach to a nominal (or a noun phrase) conjoined with another (cf. (11c) vs. (11d)). That is, while suspended affixation (equivalently, violation of the conjoinability ban) is permitted for the *–tap-* class, it is impermissible with the *–ci-* class.

(11) a. *[Kunul-kwa kilum]-**ci**-n ku kos
shade-CONJ oil-characterized-REL that place
'That plot of land, which is shaded and fertile'

b. Kunul-**ci**-ko kilum-**ci**-n ku kos
shade-characterized-CONJ oil-characterized-REL that place
'That plot of land, which is shaded and fertile'

[8] A reviewer cast doubts on the assumption that *-kath-* is a suffix, noting that in the dictionary published by the National Institute of Korean Language, *kath-ta* is listed as an adjective. If correct, this implies that forms like *papo-kath-ta* are compounds, not denominal predicates derived by suffixation.
Besides the fact that dictionaries cannot be the ultimate arbiters of grammatical analyses, there is ample evidence that *–kath-* is a bound suffixal element, as we shall see in due course. However, *tap-ta/kath-ta* can sometimes occur as a free form in certain fixed collocations, such as those discussed in Footnote 12.

c. Ku-nun [yongkamha-n kwunin-kwa cincengha-n
He-TOP courageous-REL soldier-CONJ genuine-REL
aykwukca]-**taw**-ass-ta.[9]
patriot-be.like-PST-DECL
'He really lived up to his reputation as a courageous soldier and true patriot.'

d. Ku-nun yongkamha-n kwunin-**tap**-ko cincengha-n
He-TOP brave-REL soldier-be.like-CONJ genuine-REL
aykwukca-**taw**-ass-ta.
patriot-be.like-PST-DECL
'He really lived up to his reputation as a courageous soldier and true patriot.'

Since the morphological juncture between the suffix and the base is opaque to syntactic processes such as coordination in the case of *–ci-*, I will call it an *opaque suffix*. Along with *–ci*, the suffixes *–lop-*, *–sulep- –mac-*, *–tay-*, *–keli-*, etc., belong to this group. By this naming logic, the suffix *–tap-*, along with *–kath-*, is a *transparent suffix*, as the juncture between the suffix and the base is visible to syntax.

(12) a. *–ci* class (*–ci, –lop, –sulep, –mac*, *–tay*, *–keli, –kyep-*, etc.) → Opaque suffixes

b. *–tap* class (*–tap, –kath,* etc.) → Transparent suffixes

The opacity vs. transparency of the base + suffix juncture holds consistently for all proposed LI tests, with the exception of extraction and gapping of the base, regarding which both types of suffixes behave alike.

For example, external modifiers construed with the nominal base of the predicates are possible with transparent suffixes but not opaque suffixes, as we see below. This is the test that B&M (1995) call phrasal recursivity (alternatively, external modification). The base of the opaque affix *–ci*, *kunul* 'shade' in (13a), cannot be modified by an adnominal/adjectival modifier *etwuw-**un***, 'dark'. Adverbial modification (*etwup-**key***) of the entire denominal predicate is permitted, by contrast (cf. (13b)). Exactly the opposite pattern of modification is found with the base *hakca* 'scholar' of the transparent suffix *–tap-*, as seen in (13c) vs. (13d), where adnominal but not adverbial modification is found.

(13) a. *Cenyek-ey-nun [etwuw-**un** kunul]-**ci**-nun kos
dusk-LOC-TOP dark-REL shade-characterized.by-REL place
'A place that gets dark at dusk'

b. Cenyek-ey-nun etwup-**key** [kunul-**ci**-nun] kos
dusk-LOC-TOP dark-ADV shade-characterized.by-REL place
'A place that gets dark at dusk'

c. Ku-nun [hwullyungha-**n** hakca]-**tap**-key yenkwu-lul swi-ci
he-TOP outstanding-REL scholar-be.like-COMP research-ACC stop-COMP
anh-nunta.
NEG-PRS

[9] A reviewer finds this example unacceptable and concludes that this test is invalid. However, the native speakers I have consulted with are fine with this constructed example. Instances of *–tap-* attaching to coordinated noun phrases show up in Google searches. Here's one.

Seng.tong.il Song.say.pyek, **susung-kwa** **ceyca-tap-key**, nemwu talm-ass-e
Name Name teacher-CONJ student-be.like-COMP too similar-PST-DECL
'STI and SSP, looking very compatible as teacher and student'
(https://www.fnnews.com/news/201205231455596069)

'He never stops doing research, as befits his reputation as an outstanding scholar.'

d. *Ku-nun hwullyungh-**i** hakca-**tap**-key yenkwu-lul swi-ci
he-TOP outstanding-ADV scholar-be.like-COMP research-ACC stop-COMP
anh-nunta.
NEG-PRS
'He never stops doing research, as befits his reputation as an outstanding scholar.'

For the test of gapping/ellipsis, we have to distinguish gapping targeting the suffix versus that targeting the base, since the results are different. Transparent suffixes can undergo gapping/ellipsis while stranding the base, but opaque suffixes cannot.

(14) a. *Ku kos-un kilum-_ kuliko i kos-un kunul-**ci-**ta.
that place-TOP oil- and this place-TOP shade-characterized-DECL
'That place is fertile while this place is shady.'

b. Ku kos-un kilum-**ci**-ko kuliko i kos-un
that place-TOP oil-characterized-CONJ and this place-TOP
kunul-**ci-**ta.
shade-characterized-DECL
'That place is fertile while this place is shady.'

c. ?Cheli-nun kwunin-_ kuliko Tongswu-nun haksayng-**tap-**ta.[10]
C-TOP soldier and T-TOP student-be.like-DECL
'Cheli is every bit a soldier and Tongswu, (every bit) a student.'

d. Cheli-nun kwunin-**tap**-ko kuliko Tongswu-nun haksayng-**tap-**ta.
C-TOP soldier-be.like-CONJ and T-TOP student-be.like-DECL
'Cheli is every bit a soldier and Tongswu, (every bit) a student.'

However, neither type of suffix can be stranded when the base undergoes gapping/ellipsis.

(15) a. Cheli-nun yocum pwuccek elun-sulep-ta.
C-TOP these.days much grown.up-be.like-DECL
'Cheli is acting a lot more mature these days.

b. *Tongswu-to _-**sulep**-ta. (*Tongswu-nun __-**sulep**-ci anh-ta.)
T-also -be.like-DECL T-TOP -be.like-COMP NEG-DECL
'Tongswu is, too. (But Tongswu isn't.)

c. *Tongswu-to _-**tap**-ta. (*Tongswu-nun __-**tap**-ci anh-ta.)
T-also -be.like-DECL T-TOP -be.like-COMP neg-DECL
'Tongswu is, too.' (But Tongswu isn't.)

In order to exemplify the contrasting behavior of the two types of suffixes with respect to inbound anaphoric islands, we must employ *–sulep-* as representing the opaque class, since unlike the other opaque suffixes (such as the almost synonymous *–lop-*), *–sulep-* can take names as bases (as in *Obama-sulep-ta*, 'is Obama-like'), which indicates that this suffix is admissible with bases that are potentially referring. However, while names are possible as bases, it is almost impossible to find the suffix *–sulep-* with third-person anaphoric pronoun

[10] C-S Kim (1996) marks this sentence as unacceptable on the intended interpretation, claiming that the elliptical first conjunct can only be interpreted as missing a copula ('Cheli is a soldier, and/while Tongswu looks like a student', rather than 'Cheli looks like a soldier, and/but Tongswu looks like a student'). Similarly, a reviewer finds it unacceptable. However, the native speakers I have consulted find the gapping interpretation possible.

bases. As readers can verify, a number of forms containing first or second person pronouns before *–sulep-* turn up in Google searches, but almost none with the third person pronoun *ku* can be found. By contrast, third-person pronouns occur readily as bases of *–tap-*. The following contrast is representative.

(16) a. *Kukes-un ku-**sulep**-ci anh-un hayngtong-i-ess-ta.
that-TOP he-be.like-COMP NEG-REL action-be-PST-DECL
'That (behavior) was not typical of him.'

b. Kukes-un ku-**tap**-ci anh-un hayngtong-i-ess-ta.
that-TOP he-be.like-COMP NEG-REL action-be-PST-DECL
'That (behavior) was not typical of him.'

Thus, violations of the inbound anaphoric island condition are not permitted with bases of predicates derived with opaque suffixes, but are allowed freely with bases of transparent suffixes.

What can explain the fact that potentially referring names but not anaphoric pronouns can occur as bases of the opaque suffix *–sulep-*? The outbound anaphoric island test, though generally acknowledged to be ineffective as a test of Lexical Integrity, offers a clue. As we can see below, pronouns coreferential with a name that serves as the base of *–sulep-* are marginal at best, while for transparent suffixes like *–tap-*, coreference is easily permitted with a name base.

(17) a. *?Roh-Moo-Hyun$_i$-**sulep**-ci mosha-n kyelceng-i ku$_i$-uy chwucongcatul-ul
RMH-be.like-COMP NEG-REL decision-NOM he-GEN followers-ACC
silmangsikhi-ess-ta.
disappoint-PST-DECL
'A decision that was not typical of Roh-Moo-Hyun disappointed his (=RMH) followers.'

b. Roh-Moo-Hyun$_i$-**tap**-ci mosha-n kyelceng-i ku$_i$-uy chwucongcatul-ul
RMH-be.like-rel-COMP NEG-REL decision-NOM he-GEN followers-ACC
silmangsikhi-ess-ta.
disappoint-PST-DECL
'A decision that was not typical of Roh-Moo-Hyun disappointed his (=RMH) followers.'

What this suggests is that even when names are used as bases of *–sulep-ta* they are not interpreted referentially, since otherwise there is no reason why anaphoric reference to them (*via* outbound anaphora) should be blocked.[11] Since the base is not referential, it is not surprising that anaphoric pronouns are not permitted as bases of opaque suffixes.

With regard to the test of extraction, where the nominal bases of suffixes are extracted with the suffixes stranded, the two types of suffixes behave alike. Neither type of suffix can be stranded when the base is extracted. However, this cannot be due to a general ban on extracting predicative nominals. As we see in (18c), predicative nominals can be extracted when the predicate that selects them is the free-standing word *toy-ta* 'become'.

(18) a. *[Cheli-uy malthwu-ka acwu _-**sulew**-un] Roh-Moo-Hyun
C-NOM manner.of.speaking very be.like-REL RMH
'(President) RMH, who Cheli resembles very much in his manner of speaking'

[11] Non-referential uses of names are found in expressions such as 'You are no Jack Kennedy.'

a'. Cheli-uy malthwu-ka acwu Roh-Moo-Hyun-**sulep**-ta.
C-NOM manner.of.speaking very RMH-be.like-DECL
'Cheli's manner of speaking is very much like that of (President) RMH.'

b. *[Cheli-ka _-**tap**-key nul hayngtongha-nun] [yongkamha-n kwunin][12]
C-NOM like-COMP always act-REL brave-REL soldier
'The brave soldier that Cheli always acts like'

b'. Cheli-ka yongkamha-n kwunin-**tap**-key nul hayngtonghan-ta.
C-NOM brave-REL soldier-like-COMP always act-DECL
'Cheli always acts like a brave soldier (that he is).'

c. Cheli-ka [PRO _ cangcha **toy**-ko sipheha-nun] oykwa.uysa
C-NOM later become want-REL surgeon
'(A) surgeon, which is what Cheli wants to become'

c'. Cheli-ka [PRO cangcha oykwa.uysa-ka **toy**]-ko siphehanta.
C-NOM later surgeon-NOM become-COMP wants
'Cheli wants to become a surgeon.'

A final fact of interest is that, as noted by previous researchers (C-K Shi 1994; C-S Kim 1996), the same suffix can occur in both groups, with predictable differences in opacity vs. transparency of the base + suffix juncture. Specifically, *–tap-*, which is normally a transparent suffix, takes on the properties of an opaque suffix in a few denominal predicates (such as *alum-tapta* 'be beautiful' and *ceng-tapta* 'be affectionate'). As seen below, the base of *ceng-tapta* cannot be modified by an adjectival/relative clause modifier (cf. (19a)), but only by an adverbial modifier (cf. (19b)). SA is not possible either (cf. (19c)). Another transparent suffix *–kath-*, behaves like an opaque suffix in words such as *papo-kathta* ('be foolish') and *pyengsin-kathta* ('be a loser') (cf. (20)). I will call these suffixes *double-duty suffixes*.

(19) a. *Kukes-un [ttattusha-n ceng]-**taw**-ass-ta.
it-TOP warm-REL affection-be.like-PST-DECL
'It (e.g., the gesture) seemed to be very affectionate.'

b. Kutul-un taytanh-i [ceng-**taw**]-un sa.i-(i)-ta.
they-TOP exceeding-ADV affection-be.like-REL relation-(be)-DECL
'They have a really close relationship.'

c. *[Ceng-kwa alum]-**taw**-un sa.i
affection-CONJ beautiful-be.like-REL relation
'Close and beautiful relationship'

[12] There are uses of *tap-ta* (and *kath-ta*) that can apparently occur without bases, but this seems to be restricted to the negative form in the fixed collocation *tap-ci anh-key kwulta/hayngtonhata* ('act/behave in an unacceptable manner'), as in the following, retrieved through a Google search.

Tap-ci **anh-key** kwull-ess-teni tolikhi-ki elyew-eci-e pelli-ess-ney-yo.
be.like-COMP NEG-COMP behave-PST-since turn.back-NML difficult-INCH-COMP end.up-PST-DECL-DM
'Since (I) had acted in an unacceptable manner, it has become difficult to undo the damage.'
(https://twitter.com/schnee305/status/18678800605)

Sherlock-i **tap-ci** **anh-key** hayngtongha-n iyu-nun?
S-NOM be.like-COMP NEG-COMP act-REL reason-TOP
'Whats' the reason that Sherlock isn't acting like his usual self?'
(https://windmillrabbit.tistory.com/101)

Nevertheless, the judgment of unacceptability of (18b) is robust, indicating that *tap-ta* which occurs with a nominal base is a bound form. The failure of *-tap-* to be stranded when the base undergoes gapping/ellipsis (cf. (15c)) is another indication that the suffix is a bound form.

(20) a. *Ku cis-un [taytanha-n papo]-**kath**-ass-ta.
that act-TOP exceeding-REL fool-be.like-PST-DECL
'That was an extremely foolish thing to do.'

b. Ku cis-un taytanh-i [papo-**kath**]-ass-ta.
that act-TOP exceeding-ADV fool-be.like-PST-DECL

c. *Ku cis-un [papo-wa pyengsin]-**kath**-ass-ta.
that act-TOP fool-CONJ loser-like-PST-DECL
'That was a foolish and dumb thing to do.'

The following **Table 1** summarizes the properties of the two types of denominal suffixes with regard to Lexical Integrity tests. Though double-duty suffixes are presented separately, their behavior reduces to that of either transparent or opaque suffixes. What is interesting about them is that the same affix can belong to both types, and not the distinct suite of properties that they display.

In the next section, I shall develop an analysis of the two types of denominal predicates in a system that employs some key tenets of Distributed Morphology.

Table 1: Violability of lexical integrity tests.

	Coordination	External Modifiers	Gapping (Base)	Gapping (Suffix)	Inbound Ana Island	Outbound Ana Island	Extraction (Base)
Opaque Suffix	N	N	N	N	N	N/Y(?)	N
Transparent Suffix	Y	Y	N	Y	Y	Y	N
Double-duty Suffix	N/Y	N/Y	N	N/Y	N/Y	N/Y	N

3 Two types of denominal predicates in a DM-like approach

3.1 Roots and Word-internal phases

A line of thinking within current DM that holds promise as an explanation of the selective transparency of word-internal structure to syntax is the distinction between Roots and Words (Marantz 1997; Arad 2003; Borer 2005a; b; Embick 2010; Harley 2014 (and commentaries on the paper); de Belder & van Craenenbroeck 2015, among others) and the related concept of *Word-internal phases* (Marantz 2007, among others).

The basic idea underlying this proposal is that lexical category specification is not an inherent, stipulated, property of lexemes/roots but is determined syntagmatically, when category/feature-less roots combine with functional categories that possess lexical category specification. In this view, lexemes/roots are pairings of meaning (*signified*) and sound (*signifier*), but not through the mediation of syntactic category, as widely assumed in both traditional and generative grammar. The proposal makes intuitive sense in languages where lexemes, whether free are bound, are indeterminate as to lexical category, and only come to be differentiated in terms of lexical category when category-specific syntagmatic context is present. But of course, the distinction is meant to be universal.

Before we proceed, it is important to clarify that the concept of root in DM is not the same as that of roots as understood in morphological terms (that is, as the base of all affixation). Defined morphologically, roots cannot be decomposed morphologically. However, in the adapted usage in DM, morphological complexity or lack thereof does not have a

straightforward relationship to Root status.[13] For example, Marantz (1997) claims that *destruction* is the allomorphic form of the Root √DESTROY when it occurs in nominalizing contexts, and does not take the suffix *–ion* to instantiate the nominalizing functional head. Arad (2003) likewise takes the morphological composition of tri-consonantal binyanim in Hebrew plus the vocalic melody to constitute the Root, whereas only the binyanim were taken to constitute roots under earlier analyses such as McCarthy (1981). The defining property of Roots as understood in these works is that a Root does not have any syntactic/grammatical features. Therefore, while Roots may have morphologically relevant internal structure, whatever structure there may be internal to a Root will by definition be invisible to syntax.[14]

While there is much fruitful research regarding Roots in DM, the result that is central to our analysis is that a Root does not possess syntactically parsable features (Borer 2005a; b; Zhang 2007; Wiltschko 2009; Embick 2010; de Belder & van Craenenbroeck 2015, etc.). This is the first crucial component of the proposed account. We shall call this idea the thesis of *Root domain opacity*.

Root domain opacity works in tandem with the thesis of *Word-internal phases* (Marantz 2007). Phases in core syntax define locality domains for syntactic computations such as feature-checking and movement. The *phase impenetrability condition* (PIC) limits access of materials contained in an earlier phase so that only the edge of the phase is visible to the next phase head. Applications of the Phase concept in morphology hypothesize that the Root plus the first categorizing head constitute a phase, and that every category-changing head also defines a phase (Marantz 2007). This implies that the juncture between the Root and the categorizing suffix will not be visible to syntactic principles.[15] Of course, any structure internal to a (multi-morphemic) Root is also invisible to syntax, but this is due to root domain opacity. By contrast, the juncture between a (categorized) Word and a following suffix should remain visible to syntax, as long as there is no intervening phase boundary internal to the Word. This is the second crucial component of the account.

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[13] I will henceforth differentiate these two senses orthographically, by capitalizing the DM notion of Root and employing the lower case for the traditional notion.

[14] This interpretation, which I take to be a valid rendition of the current understanding of the notion in DM, raises interesting questions about how a Root that is multi-morphemic (e.g., [*destruct*-ion]$_R$) comes to obtain its internal structure.

Under one interpretation of the 'single engine' hypothesis, all non-phonological structure inside a Root should be assigned by syntax, since there is no distinct component of morphology. So, how do the parts of a morphologically complex Root that functions as an atom in the syntax get put together, since 'atomic' means that the internal properties of the object are opaque in syntax and therefore not put together by syntactic principles?

The answer depends on the properties of the operation that assigns structure, *Merge*. If Merge operates without syntactic conditions (such as c-selection), but only in terms of an indiscriminate Edge Feature (Chomsky 2008), then Merge could take two Roots and a Root with complex structure whose parts are still invisible to syntax. The only way that something put together by such an impoverished Merge operation can come to be active in core syntax is if the complex unit obtains syntactic features by combining with a lexicalizing functional head. Zhang (2007) adopts an approach along these lines when she distinguishes between Root-Root compounds and compounds involving lexicalized Roots (Words) in Mandarin Chinese.

Another way to allow structural complexity within Roots is proposed in de Belder & van Craenenbroeck (2015), who assume that anything, including those with complex internal structure derived by regular Merge, can become a Root, by being inserted in a Root position. However, once in a Root position, the internal structure of the constituent is inaccessible to syntax, because a Root, by virtue of being featureless, is "a Bermuda Triangle for grammatical features" (2015: 632).

[15] This is because the Root and the categorizing suffix constitute a Phase, and only the head of the Phase (the suffix) but not the complement domain of the phase head (=base) is accessible at the next phase, by the PIC. Since the structure from the first suffix up deals in syntactic features, it means that syntactic processes cannot access the Root-suffix juncture. Under this view, even if the Root-categorizing affix selection relation involves syntactic features, the juncture between the two would still remain invisible.

Given these assumptions, the following is what DM predicts about Lexical Integrity.

(22) Lexical Integrity is a consequence of Root domain opacity and Word-internal phases.

We shall see that (22) is indeed supported by the facts of Korean denominal predicates introduced in Section 2, if we additionally hypothesize the following:

(23) a. Opaque suffixes combine with Roots, and assign category (as verb or adjective) to them.[16]
b. Transparent affixes combine with syntactically categorized phrases/words.

Since the juncture between the base (a Root) and an opaque suffix is internal to the first phase, syntactic operations will not be able to access the juncture. Nor will any Root-internal structure be accessible to syntax, even when put together by Merge. By contrast, the juncture between the base of a transparent suffix (a categorized constituent, by hypothesis) and the suffix will be visible to syntactic processes, as long as the phase impenetrability condition (PIC) is satisfied.

The thesis of Root domain opacity and Word-internal phases are posited in DM without Lexical Integrity in its crosshairs. So if they are able to predict Lexical Integrity, it would be a most welcome result. What we need to do then is find support for the additional assumptions in (23). This is what we turn to next.

3.2 Roots vs. Words in Korean denominal predicates

How can we tell if the base of the denominal predicates is a (category-less) Root or a (categorized) noun? Recall that there is no correlation between structural/morphological complexity and Root status. Therefore, a different way of identifying Roots must be sought.

Building on Wiltschko (2009) and many other works, I propose that in Korean Roots with noun-like meanings can be distinguished from their fully nominal(ized) Word counterparts in the following manner.[17]

(24) **Roots**
a. Lack of syntactic distribution (that is, the inability to stand alone in any syntactic context)

[16] A reviewer asks how prefixes, which are not category-determining, can be selective about the bases to which they attach, if the bases themselves are a-categorial Roots, as maintained in DM. Concretely, the prefix *mayn-* ('bare') can seemingly attach to nominals (*mayn-son*, 'bare hand'), but not verbs or adjectives (**mayn-manna-ta* 'pref + meet-DECL').
Though this question is not directly relevant to the topic of the current paper, it is a challenge to the DM assumptions on which the paper rests. One way to constrain the attachment is to invoke meaning. The reason why *mayn-* does not attach freely to verbs is not because its attachment is constrained by syntactic category, but because the meaning of the prefix may not be compatible with predicate meanings.
Another issue that challenges the thesis of a-categorial Roots is *conversion*. Under the DM system, we don't expect to see directionality effects in conversion, but rather a direct categorization of a Root as V or N. As a reviewer points out, directionality effects are attested in conversion (Don 2004), challenging this view.

[17] A reviewer remarks that the distinctive properties of Roots and nouns listed here may be attributed to the absence/presence of nominal functional structure above a Root. I could not agree more. Under the assumptions of DM, what we are calling a 'noun', as a matter of convenience, is always a complex object, involving a Root plus at least the nominalizing functional head (suffix), on top of which additional nominal functional projections may exist.
In addition, it should be emphasized that the discussion of the properties of Roots here focuses on the contrast between a Root and its noun incarnation, and is not meant to be a comprehensive definition of Root properties in all situations.
As to why certain Roots are categorized as nouns and not verbs (or vice versa), we hypothesize that while Roots lack syntactic features, they may be differentiated by semantic types and it is the semantics that lies behind the ease with which a particular Root receives a particular categorization. See Harley (2014) for discussion and references on this issue.

b. Indeterminate/vague meaning
c. Compatible with affixes that attach to Roots
d. Incompatible with nominal plural marking or nominal particles
e. Incompatible with determiners/possessives (adnominal constituents)
f. Non-referential interpretation

Nouns
a. Nominal distribution (ability to occur in syntactic contexts calling for a noun)
b. Concrete meaning
c. Compatible with affixes that attach to Words
d. Compatible with nominal plural marking and other nominal particles
e. Compatible with determiners/possessives (adnominal constituents)
f. Referential interpretation supported

That is, a Root cannot have a syntactic distribution by itself, since we take syntactic distribution to be defined in terms of syntactic categories. Roots will thus appear to be 'bound' syntactically.[18] In addition, the meaning of a Root may be indeterminate, with concrete interpretations arising only in combination with other functional heads (Arad 2003; Borer 2005a; b). Morphologically, we expect to find a difference between affixes that attach at the Root-level and those that target the Word-level. This difference should be reflected in morphotactics as well, with Root-level affixes showing up as inner affixes while Word-level affixes appear as outer affixes.

Roots will differ from nouns (Words) in the following additional ways. Not only will a Root fail to occur in a position calling for nouns, a Root will not be able to co-occur with any element that specifically requires a noun. In Korean, these elements include adnominal constituents/modifiers such as determiners, possessives, and adnominal clauses (relative and noun complement clauses), which we assume combine only with a nominal constituent. We also assume that nominal particles in the language attach to constituents larger than a Root, that is, nouns or nominal functional categories. If so, Roots will not be able to combine with these particles without first being categorized as nouns.[19]

Roots also differ from their nominal incarnations interpretively. They only allow non-referential interpretation while nouns (when they combine with higher nominal functional categories, such as D, we assume) support referential interpretations (Baker 2003). This is the tendency of Roots being indeterminate with respect to meaning manifesting itself in the nominal domain.

[18] The sense in which Roots are 'bound' cannot be equated with being morphologically bound. This is because there are morphologically bound forms that are category-bearing. For example, native verbal roots in Korean (*mek-* 'eat' in *mek-ess-ta* 'eat-PST-DECL') are morphologically bound but are treated as verbs in most accounts. Roots that are realized as nouns are not morphologically bound, but because they are Roots, they fail to stand alone syntactically, appearing to be 'bound'.
A reason to distinguish two types of boundness comes from the fact that apparently 'bound' bases of denominal predicates (Roots) cannot take verbal inflectional suffixes directly, as shown below. For example, the 'bound' Root *kkata-* (in *kkata-lop-ta*, 'be finicky') cannot occur by itself. However, it fails to take verbal inflectional suffixes directly.

(i) Kkata-lop-ta vs. *kkata-ess-ta vs. kkata-lop(w)-ass-ta
R-be.char.by-DECL R-PST-DECL R-be.char.by-PST-DECL

If we assume that verbal inflections require a morphologically bound base, we can explain the difference. The distinction between morphological boundness and the syntactically 'bound' status of nominal Roots will become important in subsequent discussions. We will distinguish the two senses by using *m-bound* vs. *s-bound* ('s' for syntactic), when necessary. Bases of predicates are m-bound, but not necessarily s-bound, while (nominal) Roots are s-bound, but not m-bound.

[19] We will return to cases where intuitively nominal particles are attached to non-nominal constituents.

In laying out the argument in support of (23), we deal first with the properties of Roots vs. nouns that are orthogonal to lexical integrity, that is, (a)–(d) of (24). We do this in Sections 3.2.1 through 3.2.4. We then take up (e) and (f) in Section 3.3 where we discuss how the Root-Word distinction accounts for lexical integrity as it plays itself out in Korean denominal predicates.

3.2.1 Root-level affixes vs. Word-level affixes

In this section we will see that there is morphological evidence in favor of the supposition that opaque suffixes attach to Roots while transparent suffixes attach to Words.

The first indication that the bases of the two types of suffixes differ as hypothesized comes from C-S Kim (1996), who observes that it is possible for apparently bound (that is, s-bound) forms (Roots) to occur as the base of opaque suffixes. The following are examples of opaque suffixes combining with such bases.

(25)

[**kkata**]$_R$-lopta	[**chilchil**]$_R$-macta	[**a.long**]$_R$-cita	[**yeyppu-cang**]$_R$-sulepta
R-suggest.of	R-be.char.by	R-be.char.by	R-be.like
'be picky'	'be a klutz'	'be dappled'	'be pretty'

[**mek-umcik**]$_R$-sulepta
R-be.like
'seem tasty'

Notice that among the bound bases of the opaque suffixes we have both morphologically simple (*kkata*, *chilchil*, *a.long*) and complex (*yeyppu-cang*, *mek-umcik*) entities, which is expected if Roots differ from roots. Since the meaning of bases can be difficult to pin down, I gloss them simply as R, though in the case of morphologically complex Roots, we can identify the component parts and their meanings a bit better than in the case of simple bases. For example, *yeyppu-cang* is a Root derived from the root/Root *yeyppu-* ('pretty') through suffixation of *–cang*, which is traditionally taken to be a nominalizing suffix, but which we now take to be a Root-level suffix that derives a category-less Root from another.[20] We also take *mek-umcik* to be a Root, despite the fact that it is clearly decomposable into the (morphological) root *mek-* ('eat'), and the suffix *–umcik*. Again, while *–umcik* is sometimes viewed as a nominalizing suffix, we view it as a category-less Root-level suffix attaching to Roots to yield Roots.[21]

An observation that C-E Song (1992) makes about morphologically complex bases of opaque suffixes can also be interpreted as supporting the Root status of such bases. Song observes that while the bases of opaque suffixes can be morphologically complex, they only admit affixes like *–cang* and *–umcik*. Crucially, category-changing affixes such as

[20] A reviewer questions whether the base of suffixes like *–sulep-* is indeed category-less, citing the observation (from C-E Song 1992) that the suffix cannot combine with verb/adjectival roots. Song took this to imply that the base of *–sulep-* must be specified as a noun.

(i) ***ccalp**-sulep-ta (cf. ccalp-ta 'be short')
***ilk**-sulep-ta (cf. ilk-ta 'read')

Since I am suggesting that the base of *–sulep-* is a category-less Root, I need to provide an explanation for why verbal/adjectival roots are disallowed as bases of opaque suffixes like *–sulep-* without invoking syntactic categories. It is not difficult to come up with such an account.
We can explain the restriction in terms of the discussion in Footnote 18, where we distinguished two kinds of boundness, m-bound vs. s-bound. The reason that *–sulep-* cannot attach to predicate bases is because it selects bases that are s-bound but not m-bound.

[21] Understood this way, the concept of Root in morphology is similar to levels/strata in Lexical Phonology (Kiparsky 1982) or its word-structure based alternative (Selkirk 1982). Coincidentally, Selkirk (1982) treats all level 1 affixes as attaching to Roots to produce Roots, thereby using the term Root in a way similar to its usage in DM. Marvin (2002) makes the parallels explicit in her analysis of level ordering in DM terms.

deverbal nominalizers cannot be attached to the base.[22] The following shows that even the relatively productive opaque suffix *–sulep-* cannot take bases that contain nominalizing suffixes. By contrast, the transparent suffix *–tap-* with a similar meaning can combine with such bases, as pointed out by Song.

(26) a. *[[Nol]-**i**]-sulepta play-NML-be.like
*[[pel]-**i**]-sulepta earn-NML-be.like
cf. [[pel]-**i**]-taw-un pel-i earn-NML-be.like-REL earn-NML 'a real/substantive income'

*[[Wul]-**um**]-sulepta cry-NML-be.like
*[[ssaw]-**um**]-sulepta fight-NML-be.like
cf. [[ssaw]-**um**]-tapta fight-NML-be.like 'befitting a fight'

*[[Talli]-**ki**]-sulepta run-NML-be.like
*[[tenci]-**ki**]-sulepta throw-NML-be.like
cf. [[tenci]-**ki**]-tapta throw-NML-be.like 'befitting a throwing (match)'

b. [[Mek]-**umcik**]-sulepta [[yeppu]-**cang**]-sulepta cf. (25) above

These facts are predicted if we distinguish Root-level affixes (*–cang, –umcik*) that attach to Roots to yield Roots from category-changing nominalizing affixes (*–i, –ki,–um*) that take categorially specified bases (verb or adjective) and turn them into nouns.

Furthermore, we can also make sense of the observation (C-S Kim 1996) that the bound forms which are possible as bases of opaque suffixes cannot occur as bases of transparent suffixes. Since these forms are Roots in our analysis, and transparent suffixes take categorized nouns/Words, this is predicted.

(27) a. *[Mit-umcik]$_R$-**tapta/-kathta**
R-be.like/-seem.like

b. *[Yeyppu-cang]$_R$-**tapta/-kathta**
R-be.like/-seem.like

c. *[Kapcak]$_R$-**tapta/-kathta**
R-be.like/-seem.like

d. *[Ppenppen]$_R$-**tapta/-kathta**
R-be.like/-seem.like

3.2.2 Indeterminacy of meaning

We have already noted that the meaning of bases of denominal predicates may be difficult to pin down. It turns out that this indeterminacy is found with the bases of opaque suffixes, but not that of transparent suffixes, as is clear from the examples we have seen thus far (cf. (8), (25)).

This generalization is consistent with the supposition that the bases of opaque suffixes are Roots while those of transparent suffixes are Words. Under the assumptions introduced in Section 3.1, Root domains are primary spheres of meaning indeterminacy.

3.2.3 Ability to occur in noun positions

As Roots without syntactic category specification, the bases of opaque affixes cannot stand alone in any syntactic context, regardless of whether they are morphologically simple or complex, giving rise to the appearance that they are 'bound' (s-bound). For example, in order for the Root *kkata* in (28a) to have a syntactic distribution (as a nominal Complement of the nominal particle *–lo*), it must be turned into a denominal predicate (*kkata-lop-*) and then

[22] The nominalizing suffixes *–um, –ki* behave as *ad-phrasal* suffixes (syntactic nominalizers) in Korean, as is well-known (J. Yoon 1996). And though *–i* is not a syntactic nominalizer, it clearly takes categorized bases (verbs) and turns them into nouns.

nominalized (through *–ki*). A similar sequence of morphological changes is required in (28b), before the Root can occur in the subject (a nominal) position marked by the topic particle *–nun*.

(28) a. *Cheli-nun **kkata**$_R$-lo yumyenghata.
C-TOP R-INST known.for
vs.
Cheli-nun **kkata**-lop-ki-lo yumyenghata.
C-TOP R-suggest.of-NML-INST known.for
'Cheli is famously picky.'

b. ***Kkata**$_R$-nun celtay phihay-ya han-ta.
R-TOP at.all.costs avoid-COMP do-DECL
vs.
Kkata-low-um-un celtay phihay-ya han-ta.
R-suggest.of-NML-TOP at.all.costs avoid-COMP do-DECL
'(The urge to be) picky should be avoided at all costs.'

Neither can Roots occur in syntactic contexts calling specifically for nouns, such as pre-nominal modifiers or in a position following a demonstrative.[23]

(29) a. *[**Yeyppu-cang**$_R$]-uy elkwul
R-GEN face
vs.
[**Yeyppu-cang**] -sulew-un elkwul
R-be.like-REL face
'An atttractive face'

b. *Ce [**yeyppu-cang**]$_R$ com po-ala!
DEM R a.little see-IMP
vs.
Ce [**yeyppu-cang**]-sulew-un cis com po-ala!
DEM R-be.like-REL act a.little see-IMP
'Look how cute (s/he is)!'

The assumption that the base of an opaque suffix is a Root predicts that we will find syntactically bound forms as bases, which was indeed the case. However, not all bases to which opaque suffixes attach are syntactically bound. Words such as *kunul* ('shade') and *nwun-mwul* ('tears', literally, 'eye-water') occur in positions of nouns (cf. (30)), but are also admissible as the bases of opaque suffixes (cf. (31)).

(30) a. Cheli-nun **kunul**-ul chaca taniessta.
C-TOP shade-ACC seek went.around
'Cheli was looking for a shade.'

b. **Nwunmwul**-man hulli-ci mal-ko cengsin chali-ela!
tears-only shed-COMP do.not-COMP senses recover-IMP
'Stop crying and come to your senses!'

(31) [**Kunul**]$_X$-cita [**iksal**]$_X$-macta [**nwun-mwul**]$_X$-kyepta [**hyangki**]$_X$-lopta
Shade-be.char.by humor-impres.of tear-full.of fragrance-be.char.by
'be shady' 'be humorous' 'be sad' 'be fragrant'
(x = Root? Noun?)

[23] The Root *yeyppu-cang* in (29a) must first be turned into a denominal predicate (adjective) *yeyppucang-sulep-* and then into an adnominal/relativized form *yeyppucang-sulew-un*, in order to function as a modifier of the following noun.

The question arises whether these forms are Roots or nouns when they occur as bases of opaque suffixes. We shall argue that they remain Roots, when we discuss lexical integrity effects in Section 3.3.

3.2.4 Nominal particles

We now turn to the prediction that the juncture between the base and an opaque suffix should not allow nominal particles while the base-suffix juncture of a transparent suffix should. This prediction is predicated on the assumption that these particles combine with (projections of) nouns and nominal functional categories but not with Roots. The prediction seems straightforward, but evaluating it involves sorting through some noise.

The complication is this. Many instances of nominal particles found word-internally scope higher than the word within which they occur. In addition, as we shall see, their word-internal positioning appears to be prosodically governed, suggesting that they are placed in their surface positions as a kind of infix. This means that we should not be led to conclude that the surface position of these particles is the position into which they have been merged. Along with such 'misplaced' particles, there are word-internal nominal particles that scope just over the element/constituent they are adjacent to. In this case, we would be justified in assuming that particle has undergone Merge with the adjacent element/constituent. This difference needs to be recognized and controlled for in evaluating the position of nominal particles that occur in the juncture between the base and the two types of suffixes. And once we do so, we shall see that the prediction that nominal particles do not combine with category-less Roots is supported.

The facts discussed above can be illustrated with the nominal plural particle *–tul*. Korean optionally marks plurality on certain types of count nouns through *–tul*. Based on this, one might conclude that a base to which the particle *–tul* has attached is a noun. However, there are instances of *–tul* that clearly do not attach to nominal bases. This is the situation with the so-called 'copied' plural marker *–tul* that occurs optionally and rather promiscuously on various constituents—including, crucially, non-nominal constituents—in a VP that is predicated of a plural subject. The inherent and copied uses of *–tul* are shown below, with appropriate glosses (PL = inherent plural; CP.PL = copied plural).

(32) Nehi-**tul** acwu-(**tul**) yelsimhi-(**tul)** kongpwu-(**tul**) ha-nun-kwuna-(**tul**).
You-PL very-(CP.PL) hard-(CP.PL) study-(CP.PL) do-PRS-APPER-(CP.PL)
'(I see) you are all studying very hard.'

Notice that all but the first instance of *–tul* occur adjacent to something that is clearly not a noun. Notice also that while the inherent plural marker on the subject is correctly positioned in terms of its scope (marking the plurality of the second person pronoun), the surface positions of the copied plural markers do not correlate with the scope of plurality, because it is the entire VP that bears the plural (or distributive, Y. Kim 1994) feature, not the adverb or object inside it.

What is crucial for our purposes is that sometimes *–tul* can be positioned *inside* morphologically complex words, yielding what has been dubbed *e.kun-pwunli-hyensayng* 'root separation phenomenon' in the native Korean linguistic tradition (H-B Im 1979).

A productive way of forming denominal predicates is through *ha*-compounding. Though the verb stem *ha-* is used as a light verb in periphrastic structures (as in *kongpwu-lul ha-ta* 'study-ACC do-DECL'), it also creates denominal compounds, especially with bases that are stative in meaning. Thus, *phikon-ha-ta* 'fatigue-do-DECL' is a compound and not a light verb construction, as the base cannot be separated and be case-marked like an object (cf.

(33a)), or be extracted (cf. (33b)). Neither can the base be modified by adnominal elements. Adverbial modification is required (cf. (33c)).

(33) a. Na-nun manhi phikon-***i**/***-ul** ha-ta.
I-TOP very fatigue-*NOM/*-ACC do-DECL
'I am very tired.'

b. *[Nay-ka manhi __-ha]-nun phikon
I-NOM very -do-REL fatigue
'Fatigue, which I suffer from a lot'

c. Nay-ka *kule-**n**/kuleh-**key** phikon-ha-ki-nun che.um-i-ta.
I-NOM so-REL/so-ADV fatigue-do-NML-TOP first.time-COP-DECL
'I have never experienced such fatigue till now.'

Nevertheless, *–tul* can be positioned in the juncture between *phikon* and *ha-ta*, yielding root separation (cf. (34a)), though (34b), without root separation, is more natural. Notice that when positioned inside the denominal compound, *–tul* is misplaced, as its proper scope is the entire VP, not the base of the compound *phikon*. This means it instantiates the copied plural, not the inherent plural.

(34) a. (Nehi-tul**)** onul-un acwu phikon-**tul**-hay poi-n-ta.
(you-PL) today-TOP very tired-CP.PL-do seem-PRS-DECL
'You all look very tired today.'

b. (Nehi-tul) onul-un acwu phikon-hay-**tul** poi-n-ta.
(you-PL) today-TOP very tired-do-CP.PL seem-PRS-DECL
'You all look very tired today.'

Root separation is not restricted to *ha-* compounds.[24] Though there is variation in judgments (C-E Song 1992 lists forms like those in (35a–c) as acceptable to him, but not everyone would agree with his judgments, as Korean-speaking readers can verify for themselves), *–tul* can occur between the base and opaque suffixes (I use % to indicate speaker variation in judgments). Again, in all these cases, *–tul* is misplaced, out of alignment with its scope, and hence must be an instance of the copied plural, rather than the inherent plural.

(35) a. %(Ku aitul-un) acwu yeppucang$_{R}$-**tul**-sulep-key kwul-e.
DEM children-TOP very R-CP.PL-be.like-COMP act-DECL
'Those children are really cute.'

b. (Ku nyesektul) nemwu chollang$_{R}$-**tul**-tay-ney.
DEM guys very R-CP.PL-act.like-DECL
'Those guys are very frivolous.'

c. %(Ku nyesektul-un) acwu iksal$_{R}$-**tul**-mac-a.
DEM guys-TOP very R-CP.PL-appear-DECL
'Those guys are really funny.'

[24] A reviewer questions the supposition that the base of *ha-ta* compounds discussed here is a Root because such compounds are determined to be verbs or adjectives depending on the properties of the base, which implies that the bases must bear category specifications, and hence, are Words under DM assumptions. While the details of how *ha-ta* compounding works is not critical to the main point of the text, there are ways to account for the facts pointed out by the reviewer. Let us assume first that *ha-ta* can derive either verbs or adjectives. Now, while Roots lack syntactic features, they bear semantic features (stativity vs. eventivity). It may be the semantic features that determine whether the Roots are categorized as adjectives or verbs (cf. Harley 2014).

The reason why 'misplaced' *–tul* can even break into word-internal junctures is because its positioning is governed by prosodic considerations, not morphological (or syntactic) considerations. This is supported by the following. The copied plural marker cannot be positioned inside words with monosyllabic bases. While (34) and (35) are possible, (36a', b') are not. However, when we are dealing with an inherent plural marker, there is no ban on attachment to monosyllabic bases, as we see in (36c).[25]

(36) a. Ku yakphwumtul-i taytanhi hay-lop-ta-ko-**tul** tul-ess-ta.
those chemicals-NOM very R-char.by-DECL-COMP-CP.PL hear-PST-DECL
'I heard that those chemicals are very harmful.'

a'. *Ku yakphwumtul-i taytanhi hay-**tul**-lop-ta-ko tul-ess-ta.
those chemicals-NOM very R-CP.PL-char.by-DECL-COMP hear-PST-DECL

b. Kulehkey him-kyep-key-**tul** ha-l kes eps-e!
so.much strength-exceed-COMP-CP.PL do-COMP thing NEG-DECL
'You don't have to work that hard!'

b'. *Kulehkey him-**tul**-kyep-key ha-l kes eps-e!
so.much strength-CP.PL-exceed-COMP do-COMP thing NEG-DECL

c. Ce cha-**tul**-un swuipha-n cha-**tul**-kath-ta.
those car-PL-TOP imported-REL car-PL-be.like-DECL
'Those cars look like imported cars.'

Assuming that word-internal *–tul* is placed prosodically, the fact that *–tul* in (35a–c) above immediately follows a Root does not mean that it has undergone Merge with the Root that is adjacent to it. Hence, (35a–c) are only apparent counterexamples to the prediction that a genuine nominal particle should not combine with a category-less Root. Notice also that (35a–c) are subject to a range of speaker variations. This may stem from a desire on the part of speakers to avoid prosodically infixing *–tul* in word-internal, as opposed to word-peripheral, junctures.

By contrast, speakers uniformly accept *–tul* between the base and the suffix in transparent predicates, as shown below (and (36c) above). The *–tul* in these examples is the inherent nominal plural *–tul*, which scopes over the base nominal (nP or DP) with which it has undergone Merge, as indicated by the bracketing.

(37) a. (Ku haksayngtul-un) [[Harvard.haksayng]-**tul**]-tap-ney.
DEM students-TOP H.student-PL-act.like-DECL
'Those students really live up to their reputation as Harvard students.'

b. (Ku salamtul-un) [[mikwuk-ey olay sa-n salam]-**tul**]-kath-ney.
DEM people-TOP US-LOC long live-REL people-PL-be.like-DECL
'Those people look like they've lived in the US for a long time.'

A striking confirmation that *–tul* here must be the inherent plural marker is that it can co-occur with a copied plural marker attached to the right edge of the word.

[25] If root separation is prosodic in *ha*-compounds, we expect mono-syllabic bases to resist separation. The following shows that this expectation is borne out.

(i) Phikon-**tul**-hata vs. *chak-**tul**-hata
fatigue-CP.PL-do kindness-CP.PL-do
'are tired' 'are kind.'

Thanks to a reviewer for the observation.

(38) a. (Ku haksayngtul-un) Harvard.haksayng-**tul**-tap-ney-**tul.**
DEM students-TOP H.student-PL-act.like-DECL-CP.PL
'Those students live up to their reputation as Harvard students.'

b. (Ku salamtul-un) mikwuk-ey olay sa-n salam-**tul**-kath-ney-**tul.**
DEM people-TOP US-LOC long live-REL people-PL-be.like-DECL-CP.PL
'Those people look like they've lived in the US for a long time.'

If the preceding discussion is on the right track, the prediction that nominal particles should not combine with Root bases but should be allowed with noun bases is supported, though a certain amount of detective work needed to be done to see that this is so.[26]

Thus far we have provided evidence in support of points (a) through (d) of (24), which confirms the hypothesis (given in (23)) that the bases of opaque suffixes are Roots while those of transparent suffixes are Words. We now turn to the two remaining points (d) and (e), which relate to Lexical Integrity.

3.3. Lexical integrity and Root vs. Word distinction

As stated in (22), a theory like DM leads to the expectation that any structure inside a Root will be opaque in syntax, as will any structure inside the first phase constituted of the Root plus the first categorizing head/affix. By contrast, structure above the first phase should be accessible to syntactic processes, as long as other constraints (such as PIC) are satisfied.

Specifically, this means that nothing should prevent the noun base of a transparent suffix from being modified by external nominal modifiers, yielding violations of the LI test known as phrasal recursivity **(**external modification**)**, while the Root base of an opaque suffix should not permit such external modifiers. This was point (d) of (24), to which we now turn.

3.3.1. Phrasal recursivity (external modification)

In Section 2, we already noted that the bases of the two types of denominal predicates differ in their ability to violate the LI test of phrasal recursivity/external modification. We now have a theoretical explanation of why this should be the case. Nominals that are part of words should not differ from nominals that are not in terms of the ability to host adnominal modifiers. A schematic analysis of nominal bases of transparent suffixes (that are nouns or nominal functional heads, such as D) with external adnominal modifiers is given below.

(39) a. $[_{DP}$ **kulen** $[[salam]_R$-*n*$]]$-kathta
DEM person-seem.like
'seems like that type of a person'

b. $[_{DP}$ [**yongki iss-nun**] $[_D$ ne]] -tapta
courage have-REL you-be.like
'is very much like the courageous person you are'

c. $[_{DP}$ [**Kim-kyoswunim-uy**] [[haksayng]$_R$-*n*]]-tapta
K-professor-GEN student-be.like
'is very much like Professor Kim's student (that s/he is)'

[26] Plural-marking *–tul* is not the only nominal particle whose distribution we should consider. However, for reasons of space, the distribution of other nominal particles (delimiters) must be left to future work, though there are reasons to believe that when these particles occur inside opaque junctures, they do so as 'misplaced' particles.

We do not expect external modification to be possible with Root bases of opaque suffixes. Syntactically bound Root bases (such as *yeppucang, kkata*, etc.) do not admit external modification, as we see below:

(40) a. *[**Kulen** [yeppucang]$_R$]-sulep-key ha-nun cis poa-la!
DEM R –char.by-COMP do-REL thing see-IMP
'Look at how pretty (s/he) is!'

b. *Ku-nun [**taytanha-n** [kkata]$_R$]-lop-key hayngtonghanta.
He-TOP extreme-REL R-be.like-comp acts
'He is very picky.'

Now, in cases where the bases of opaque suffixes are syntactically bound, we can be confident that they are Roots. What about when they are not? As shown in (30) and (31) earlier, there are bases of opaque suffixes that can stand alone in nominal contexts. This raises the question of whether forms like *kunul* and *iksal* are Roots or nouns when they occur as bases of opaque suffixes. The following suggests that they are still Roots. Modifiers that require nouns cannot modify the base of opaque suffixes because, by hypothesis, they are Roots. phrasal recursivity/external modification ban remains inviolable, as we expect.

(41) a. *[**Celen** [iksal]$_R$]-macta
DEM humor-impres.of
'Give impression of that (kind of) humor'

b. *[**Cipwung-uy** [kunul]$_R$]-cita
roof-GEN shadow-be.char.by
'Characterized by the shade of a roof'

The above observations in turn imply that when forms such as *kunul* occur in isolation, or in specifically nominal contexts, they do so not as Roots, but because they have been categorized as nouns (through a null nominalizing affix (=*n*), we assume).[27]

(42) a. Celen [[iksal]$_R$-***n***]$_N$-un yocum an-thonghan-ta.
DEM humor-TOP these.days NEG-carry-DECL
'That style of humor does not work these days.'

b. Cipwung-uy [[kunul]$_R$-***n***]$_N$-i (wuli-lul teph-ess-ta.)
roof-GEN shadow-NOM we-ACC cover-PST-DECL
'The shadow of the roof covered us.'

By this reasoning, the bases of transparent suffixes are nouns or other nominal functional categories (as in the case of pronouns and proper names), even when we don't see an overt nominalizing affix.[28]

(43) a. [[haksayng]$_R$-***n***]$_{n(P)}$-tapta/-kathta
student-be.like/-seem.like
'is very much a student'

[27] A reviewer asks whether the assumption that there is a nominalizing suffix for all nouns is independently supported. By independent support, I take the reviewer to be asking if there is a formative that can be identified as the 'little n' head (or 'little v', etc.) in Korean.
The answer is 'no'. However, we have seen evidence for a clear distinction between Roots and nouns. The decision to model this distinction through the use of a (null) nominalizing head/suffix is a technical implementation that is theory-internal. What is crucial is the empirically supported distinction between Roots and nouns that will have to be made in any theory and not the particular implementation of this distinction.

[28] The bases of transparent suffixes are minimally nPs, not Root(P)s. They must also have nominal functional superstructure on top of nP, such as DP. This conclusion is necessary if pronouns (and proper nouns) are (or raise to the head of) DPs. Perhaps pronouns spell out larger phrasal structures, along the lines of Neeleman and Szendroi (2007).

b. $[ne]_{D(P)}$-tapta/-kathta
you-be.like/-seem.like
'is very much like you'

c. $[MB]_{D(P)}$-tapta/-kathta
MB-be.like/-seem.like
'is very much like MB (= former president of South Korea)'

3.3.2 Conjoinability and suspended affixation

The remaining differences between the two types of suffixes vis-à-vis Lexical Integrity are not difficult to account for. For example, the base of transparent suffixes can be coordinated with another nominal or a nominal projection, yielding suspended affixation in violation of the conjoinability ban of lexical integrity, while that of opaque suffixes cannot. This difference can also be blamed on the Root vs. Word/noun status of the bases. It is reasonable to assume that productive syntactic coordination requires syntactic category specification, which are normally identical for all conjuncts but not always so, given the existence of *unlike category coordination* (Bayer 1996; Frazier, Munn & Clifton 2000). This implies that syntactic coordination cannot operate in the absence of category specification, which is unavailable for Roots.[29]

3.3.3 Referentiality and anaphoric islands

Another diagnostic that we claimed differentiates Roots and nouns is referentiality. Roots are non-referential. We hypothesized that it is only Roots that have undergone categorization as nouns that are (potentially) referential (Baker 2003). If the bases of opaque suffixes are Roots, we can explain why they fail to display properties attributable to reference. The fact that they are anaphoric islands (both inbound and outbound) follows straightforwardly, because the base as Root is incapable of entering into referential interpretations or dependencies. The bases of transparent affixes, on the other hand, participate fully in referential dependencies,[30] as we have seen, because they are nouns.

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[29] If productive phrasal coordination yielding suspended affixation requires syntactic category specification of conjuncts, coordination below the level of the Word (as in *pre and post-war*) cannot arise in the same way, but must result from something else. Booij (1985) argues for a prosodic reduction analysis of word-internal coordination. See also Artstein (2005) on word-internal coordination.

[30] A reviewer doubts that the nominal base of the transparent suffix *–tap-* is referential and cautions that just because names are possible as base, we should not automatically conclude that the base is referential.
This is a valid point. Earlier (cf. (17)), we distinguished between *–tap-* and the similar opaque suffix *–sulep-* in terms of whether or not the base is referential. Both suffixes are compatible with name bases (e.g., *Roh-Moo-Hyun-sulep-ta/-tap-ta*), but only the base of *–tap-* participates in outbound anaphora (can antecede an anaphoric pronoun). In addition, inbound anaphora distinguishes the two as well, since third-person anaphoric pronouns are possible as the base of *–tap-* but not that of *–sulep-*. These differences make sense if the base of *–tap-* but not that of *–sulep-* is capable of bearing reference.
Another way to diagnose referentiality would be to examine whether structural constraints on reference (Binding Theory) regulate the interpretation of the nominal base of *–tap-*. If the bases are referential, they should abide by the Binding Theory. In this regard, the following observation (Max Kim, p.c.) is crucial.

(i) Ku-nun Obama-**tap**-key yensel-ul hay-ss-ta (ku = Obama).
he-TOP Obama-be.like-COMP speech-ACC do-PST-DECL
'He gave a speech that is typical of/that one has come to expect of Obama.'

(ii) Ku-nun Obama-**kath**-i yensel-ul hay-ss-ta (*?ku = Obama).
he-TOP Obama-be.like-COMP speech-ACC do-PST-DECL
'He gave a speech in a manner emulating Obama.'

Kim notes that while the subject pronoun in (i) is construed as coreferential with *Obama*, the coreferential reading is degraded or impossible in the case of (ii). He reasons that coreference between the subject pronoun and the nominal complement of the predicates should be ruled out by condition C of the Binding Theory. If the nominal bases of both types of transparent predicates are referential, this is not expected.
First, we take the fact that the nominal base of *–kath-* is constrained by principle C of the Binding Theory to support our claim that it is referential. What we need to explain is why the nominal base of *–tap-*, which is

3.3.4 Gapping/ellipsis of suffix

Another difference between the two types of predicates had to do with gapping/ellipsis, which is possible for transparent suffixes but not opaque suffixes (cf. (14)). Since gapping/ellipsis results in the stranding of the base, the likely culprit is the bases that are stranded. With transparent suffixes, a Word is stranded, while with opaque suffixes what is stranded is a Root. Therefore, we hypothesize that a bound Root may not be stranded, while a Word can.

This in turn implies that gapping/ellipsis is syntactically constrained, rather than prosodically constrained (Booij 1985). This is so for the following reasons. We have posited Roots that are bound, specifically s-bound, but we have also taken pains to emphasize that being syntactically bound does not equate to being morphologically/prosodically bound. This means that the prohibition on the stranding of Roots in gapping may not be reduced to a morphological/prosodic deficiency of Roots. We propose that gapping/ellipsis, at least in the case of denominal predicates in Korean, is syntactically constrained in the sense that what undergoes deletion must be a syntactically identifiable unit, and that the failure for opaque suffixes to undergo gapping/ellipsis stems from the fact that the internal juncture between a Root and an opaque suffix is not visible to syntactic deletion, being internal to a phase. For transparent suffixes, the boundary is visible, and the suffix is identifiable as a syntactic unit. Therefore, gapping/ellipsis can target the suffix, stranding the complement (base).

3.3.5 Extraction and gapping/ellipsis of the base

Finally, we saw that the two types of suffixes and predicates derived with them do not differ with respect to extraction/ellipsis of the base. In neither case can the base nominal be extracted stranding the suffixes, as we have seen (cf. (18)). Similarly, the base of neither type of predicate can undergo gapping/ellipsis while stranding the suffixes (cf. (15)).

The explanation for this is straightforward. Movement/ellipsis of the bases strands the suffixes, and this results in the stranding of a morphologically (prosodically) bound suffix that is not properly attached to its host. Since both transparent and opaque suffixes are morphologically bound suffixes, and not free-standing stems, we expect them to behave alike in this regard.

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predicted to be constrained by the Binding Theory, seemingly is not. In order to understand this, we need to delve into the meanings of these two suffixes.
In asserting *X-ka Y-tap-ta*, one presupposes that X is Y (or X has the property Y, in case Y is a common noun denoting a property), and then asserts that X acted in a manner that is expected of/worthy of/typical of Y. By contrast, *X-ka Y-kath-ta* has no presupposition that X is Y (or that X has the property Y, in case Y is a common noun), but simply asserts that X and Y are similar. It is the presupposition that the subject and the complement of *–tap-ta* are the same individual in (i) that licenses the coreferential interpretation of *ku* and *Obama*. That this interpretation arises through co-reference and not binding (referential dependency) can be seen by the contrast between (i) and (iii) below.

(iii)*Caki-(casin)-un Obama-tap-key yensel-ul hay-ss-ta
self-TOP O-be.like-COMP speech-ACC do-PST-DECL

While a pronoun subject that is coreferential with the complement is permitted, a reflexive subject that is referentially dependent on the complement is not allowed, as this would constitute a violation of the Binding principles, which regulate referential dependency but not coreference (Reinhart 1983; Grodzinsky & Reinhart 1993).
A similar coreferential interpretation in apparent violation of principle C occurs in the following example in English, supplied by a reviewer.

(iv) Obama was in fine form yesterday. He_i gave another typical $Obama_i$-speech.

4. Lexical integrity redux

In our proposed explanation of how transparent predicates can violate most tests of Lexical Integrity, we relied on what we take to be an 'architectural prediction' of DM.[31] We noted that if the base and the suffix remain separate formatives throughout core syntax and become a word/complex head only in the post-syntactic component (morphology), their syntactic properties should be no different from those structures that get spelled out as analytic constructions, because in core syntax, they *are* analytic constructions. We saw that this expectation is met in the case of transparent predicates in Korean. The nominal base can be modified by adnominal modifiers. The projection of the nominal base can be coordinated with other nominal phrases. All types of nominals (proper names, pronouns, etc.) can serve as the base of transparent predicates. The bases are fully referential and enter into the full range of referential dependencies. The only way in which the transparent predicates differ from analytically spelled out structures is in matters pertaining to morphology/prosody. The bases cannot be extracted or elided while stranding the suffixes, because doing so will result in a morphologically/prosodically ill-formed output. In the case of opaque predicates, because the base is a Root and because the base-affix juncture is within a phase, neither the Root nor the juncture is visible to syntactic processes. This is the reason for the opacity of the base-affix juncture in this type of predicate, according to the explanation we put forth in the previous section.

What we sketched above seems like a logical and straightforward prediction of a theory like DM. That is, except for Root domain opacity and Word-internal phases, massive Lexical Integrity violations are predicted, straightforwardly for complex heads that are formed 'after syntax' (by lowering), but even for complex heads formed in the syntax proper (by head movement). Therefore, it is puzzling that a theory like DM that advocates a unified morphosyntax has not turned its attention to the pervasive lack of lexical integrity as an architectural prediction of the theory. This lapse of attention has not gone unnoticed. Lieber & Scalise (2007) point to it, while Ackema & Neeleman (2003; 2007) use lexical integrity (syntactic atomicity) as an argument *against* theories like DM. The reason for the communal silence, we suspect, is that this straightforward prediction is *not* upheld in most cases, and the case of Korean transparent suffixes constitutes the exception rather than the norm.[32]

[31] The term 'architectural prediction' is inspired by the title of Embick & Marantz's (2008) paper on Blocking ('Poser blocking') and DM. In the paper, they correctly point out that Poser blocking should not exist if the DM architecture is correct, and proceed to offer alternative analyses of the phenomenon that does not invoke a principled distinction between 'words' and 'phrases'. The lack of lexical integrity is another architectural prediction of DM, but one that has not been taken by the horns, at least not yet.

[32] A reviewer disagrees with this assessment and argues that "this putative silence might be attributed to the fact that there is no big issue here". S/he goes on to write that "claiming there is not a generative lexicon does not commit us to the claim that there would be no difference between the several ways in which words and phrases are built in the course of the syntactic derivation". The reviewer then provides the analogy of different types of A'-movements (focus versus wh-movement) that may be characterized by similarities as well as differences, and of different types of A-movements (movement in raising versus control).
In the perspective of this reviewer, the difference between complex heads created by morphological operations and the analytic structures that underlie them should be understood in a similar way. The unified architecture of morphosyntax espoused in DM explains the shared properties between complex heads and analytic structures, but differences are expected, and the existence of the differences should not be an argument against the unified architecture.
The logic of the objection seems watertight. However, in order to sustain a unified account of morphology and syntax, a principled explanation of the differences between the words and phrases should be given. The analogy of control and raising is *a propos*. Movement analyses of control explain the similarities (locality) between control and raising. In addition, they also account in a principled manner for the well-known differences between the two (reconstruction, binding, scope, etc.). The differences boil down to the number of theta-roles in a movement chain.
In the case of the differences between complex heads created by morphological operations and the analytic structures that underlie them—the Lexical Integrity facts—there is, first of all, almost no account of the

The following, adapted from Ackema & Neeleman (2003; 2007), shows that lexical integrity constrains English word-formation. Stranding of dependents that are intended to be construed with a word-internal constituent (in violation of phrasal recursivity)—that is, external modifiers—is strictly banned for the bases of the words formed with *–hood*, *–able*, and *–ize*, as seen below.[33] Analytic constructions with similar or identical meanings are provided below each example for comparison.

(44) a. *[$_{N}$ parent$_{i}$ -**hood**] (of) [$_{NP}$ responsible [$_{NP}$ t$_{i}$ from Glasgow]]
a'. Neighborhood of [responsible parents from Glasgow]
b. *[$_{A}$ wash$_{i}$ -**able**] (of) [$_{VP}$ t$_{i}$ dirty dishes]]
b'. Able to [wash dirty clothes]
c. *[$_{V}$ central$_{i}$ -**ize**] [$_{AP}$ more [$_{AP}$ t$_{i}$ to our arguments]] (Head Movement derivation)
c'. *[$_{VP}$ t$_{i}$ [$_{AP}$ more [$_{AP}$ central-**ize**$_{i}$ to our arguments]] (Lowering derivation)
c''. Make [more central to our arguments]

(45) below shows that complex heads and analytic constructions differ with respect to conjoinability/suspended affixation as well.

(45) a. *[$_{A}$ wash$_{V}$ –**able**] [$_{VP}$ carefully [$_{VP}$ [$_{VP}$ t$_{i}$ in water] and [$_{VP}$ rinse afterwards]]]
a'. Able to [[carefully wash in water] and [rinse afterwards]]
b. *John [$_{VP}$ sing and dance]-**ed**.
b'. John can [$_{VP}$ sing and dance].

So, what kinds of principled explanations can proponents of DM pursue? The option that we exploited in Korean capitalizes the theses of Root domain opacity and Word-internal phases. Since these tenets were developed without lexical integrity in mind, if an account based on these tenets is viable, it would count as a principled explanation. So, will these tenets suffice to explain instances of complex words in English where Lexical Integrity cannot be violated?

4.1 Root domain opacity

The idea would be that the bases (*parent*, *wash*, *central* in (44) above) are Roots, as the affixes (*–hood, –able, –ize,* etc.) are Root-level affixes. The stranded dependents cannot be licensed by the bases if we assume that Roots lack syntactic features and cannot enter into selectional or modificational relationships (by Root domain opacity). It is only after the Root becomes categorized as a Word that the dependents will be licensed.

Now while this may be viable account of (44)–(45), this type of account predicts that when a Word-level affix attaches to a category-bearing base, stranding (external modifiers) and other violations of lexical integrity should surface, because the base could license its dependents before complex head formation. This prediction is not supported in English. The suffixes *–ness* and *–er/–est* are deemed to be Word-level suffixes in Embick & Marantz (2008). Therefore, they should allow stranding as well as other violations of lexical integrity, but they don't.

differences in the DM literature, and second, since a key tenet of DM is that the 'word' is "not a privileged derivational object" (Embick & Noyer 2007: 290), a principled explanation of the differences between complex words and analytic structures should not invoke conditions that hold only for morphologically complex words (Ackema & Neeleman 2003 make this point clear).

[33] The problem is the failure of stranding, and not the incompatible features of the modifier. *Of*-insertion in (44a, b) has no effect on the unacceptability of the relevant examples. We will come back to this point.

(46) a. *[$_{NP}$ [$_{N}$ [$_{A}$ will-ing]$_{i}$ –**ness**] [$_{AP}$ very [$_{AP}$ t$_{i}$ to help others]]] (head movement)
b. *[$_{NP}$ t$_{i}$ [$_{AP}$ very [$_{AP}$ [$_{A}$ will-ing]-**ness**$_{i}$ to help others]]] (lowering)

We need to find a different way to explain the ill-formedness of these examples.

4.2 Word-internal phases and the phase impenetrability condition

Another type of principled explanation could exploit the idea of Word-internal phases and the PIC.[34] Since Phases define locality domains for computation, the reason that the bases of Word-level affixes do not allow stranding may be because the derivations that yield stranding violate the PIC. Let's see whether PIC will do the job of ruling out the relevant examples under the assumption that every category-assigning (or changing) affix defines a Word-internal phase (Marantz 2007). The idea would be that the adjective *willing* is in a different Word-internal phase than the noun *willing-ness* that it is a part of, and is unable to license the stranded dependents *very* and *to help others*.

Now, while it may be the case that inside the derived word *willing-ness,* the adjective is unable to establish a licensing dependency with constituents outside the complex head due to the PIC, there should be no obstacle to the adjective *willing* licensing the dependents *before* it becomes part of the complex head *willing-ness*. To prevent this, we would need to stipulate that an element that is destined to become part of a complex word cannot license its dependents before becoming part of the word. This is precisely the type of explanation that should be avoided, as it invokes the special status of morphologically complex heads.

4.3 Parallel computation in word formation

Realizing the challenge that the stranding paradigm poses for unified theories of morpho-syntax such as DM, Lopez (2015) has recently offered a different type of explanation for why the bases of morphologically complex words cannot license dependents. Since the account does not invoke the special status of words, it could count as a principled explanation, if it succeeds.

The account works as follows. Lopez argues that while it is customary within DM and Minimalism to assume that complex heads can only be created by internal merge (head movement and/or lowering), this is a stipulation. He proposes that in a derivational workspace that contains several heads, external merge (EM) should be allowed to create complex heads. He reasons that this is similar to other types of 'parallel' structure-building countenanced in the theory. He thus calls his proposal *parallel computation* (PC).

The analogy is not entirely correct, however, since while complex specifiers and adjuncts are indeed built 'in parallel' with the main spine of head-complement structures and added to it at relevant derivational points, the computation that Lopez envisages for complex heads is not parallel, but acyclic.

If you think about it, there is a good reason why in DM and Minimalism complex heads are derived solely by IM and not EM. To see this, consider the following scenario. Suppose a head *f* selects *g(P)* and *g* selects *h(P)*. Bottom-up/cyclic structure-building mandates that structure within *hP* be completed before it can become a complement of *g*. Similarly, structure within *gP* should be completed before it can be selected by *f*. This is the reason that, if *f-g-h* form a complex head, they do so only via internal merge.

[34] Since the opacity is between a Word and a Word-level suffix, we cannot invoke the Word/Root distinction (Root domain opacity). This is why we are considering the PIC as a possible explanation.

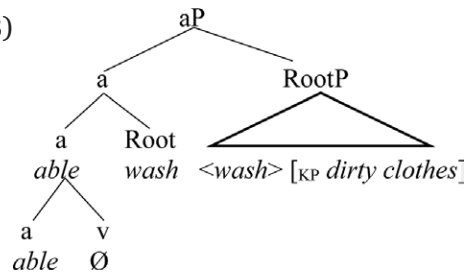
Lopez proposes that *f* and *g* can undergo EM *before* the complex head *f-g* undergoes EM with *hP*. Subsequently, IM of *h* and *f-g* will yield *f-g-h*. In the sense that EM(*f,g*) took place independently of the building of the structure of *hP*, the computation can be said to be parallel. But this derivation is not really parallel, it is *acyclic*, and quite unlike the parallel computation involved in the creation of complex specifiers/adjuncts. Concretely, the requirement that *g* select *h(P)* is not met cyclically when *f* and *g* undergo EM to form a complex head *f–g*. In parallel computations involving complex specifiers, no selectional requirement is satisfied in a delayed, acyclic, manner.[35]

Setting aside this problem for now, let us see how the PC account explains the stranding paradigm. In the complex head *wash-able*, with Root(=*wash*), *v*(=Ø) and *a*(=*able*) as relevant heads and KP as the complement selected by the Root, a PC derivation works as follows.

(47) Step 1: EM(Root, KP) and EM(*a,v*), in parallel. The former yields [$_{\text{RootP}}$ Root KP] while the latter yields the complex head [$_{a}$ *a-v*].[36]
Step 2: EM([$_{a}$ *a-v*] , RootP), yielding [$_{aP}$ [$_{a}$ *a-v*], RootP]. `
Step 3: IM([$_{a}$ *a-v*], Root), yielding [$_{aP}$ [$_{a}$ [$_{a}$ *a-v*]-Root], RootP].

The resulting structure after Step 3 is the following (adapted from Lopez 2015: 698, ex. 123).

(48)



On the reasonable assumption that the marking of dependents is determined by the syntactic category of the phase head (cf. (21), (22) in Lopez 2015: 664), it follows that KP that is stranded upon the movement of the Root will not be marked as a dependent of *v*. Lopez writes: "the derivation in (123) (=(48) above) does not yield the verb *wash*, so it follows that we should not expect any verbal modifiers." (2015: 698)

The explanation does not quite go through, on closer inspection. This is because Lopez's account predicts that when the stranded dependent is marked as that of an adjective (the phase head), the resulting derivation should be fine. (49c) below shows that infinitival complements of adjectives are possible, so (49a) should be possible with the stranded complement marked as an infinitival, but it is not. Suppose that the infinitival marking is disallowed because the stranded dependent is a nominal phrase. Since adjectives allow *of*-insertion (cf. (49d)), (49b) is predicted to be well-formed, contrary to fact.

[35] There are proposals that relax strict cyclicity in structure-building and posit that everything within a phase counts as being built simultaneously (Chomsky 2008). Under such a system, the charge of acyclicity may not stick. However, the relaxation would still not sanction the EM of complex heads that Lopez envisages, since the heads that undergo EM/PC (*v, n, a*) are distinct phase heads, under the assumption (Marantz 2007) that each category-changing/determining head within a complex head defines its own phase. Therefore, the heads may not even be present in the same derivational workspace (Numeration).

[36] Though Lopez does not show a full derivation, I am assuming that the Root selects its complement, based on his analysis of deverbal nominalizations (Lopez 2015: 669–670).

(49) a. *wash-able **to** [<wash> dirty clothes]
b. *wash-able **of** [<wash> dirty clothes]
c. able **to** [wash dirty clothes]
d. capable **of** [deception]

As a matter of fact, in deverbal nominalizations, dependents of the base verb/Root can be stranded as long as they are marked as nominal dependents and not verbal dependents.

(50) The careful wash-ing **of** [<wash> the dirty clothes]

The problem is a familiar one. Derivational word-formation does not always allow the Inheritance of arguments of the base of the derived word (Randall 1984). Deverbal nominalizations allow it, but deverbal adjectives don't. A system like Lopez (2015), where all word-formation is syntactic, is ill-suited to account for such idiosyncratic differences.

There are other challenges for Lopez (2015). In his system, the opacity of word-internal elements to syntax is tied to the PC-derivation of complex heads. However, nothing in the system rules out a more standard, cyclic, derivation of complex heads from successive complementation structures using solely IM. His system predicts that under the cyclic, IM-based, derivation of complex heads, a word-internal element should be able to dictate the form of the stranded dependents. Perhaps the transparent predicates in Korean are derived that way, and that is why the internal structure of predicates containing them is transparent to syntax. However, since the standard, cyclic, derivation and the PC-based, acyclic, derivation of complex heads exist as options in all languages, one would need a stipulation to the effect that English can only use the latter option, while Korean can employ both, albeit for different types of complex words.[37]

Finally, it is quite obvious that the idea of using PC and EM to create (at least a part of) complex heads is lexicalism redux.[38] I have pointed out that the PC derivation is not parallel, but acyclic, since complex heads are created *before* their syntactic selectional and modificational dependencies of component heads are established. This is what is also assumed in lexicalism. Complex heads are created before the syntactic derivation (that is, acyclically), and then merged into relevant positions in syntax so that only the properties of the head of the complex word are accessible to syntax.

While touted as being a natural extension of the independently necessary tenet of PC in Minimalism, the application of PC to morphology-syntax not only introduces acyclic computations, but ends up mimicking the key ideas of lexicalism, which is that morphological structure is created 'in parallel', orthogonally to syntax, and then matched/inserted into an atomic slot in syntax.

Nevertheless, despite the challenges facing the system in Lopez (2015), Lopez's intuition that there is more than one way to form a complex head (cyclic, IM-based vs. acyclic/PC, EM-based) and that this may be a key to understanding the transparency vs. opacity

[37] Even for English, since the verbal base of gerundive nominalizations can license verbal modifiers, a cyclic, IM-based derivation would need to be posited to derive them. Lopez seems to adopt this type of derivation for gerundive nominals (Lopez 2015: 663, ex 17, 18). The question then arises of how learners can establish the mode of creation of a given complex head, especially since V-*ing* also functions as a derived nominal where the verbal base is syntactically inaccessible (cf. (50)).

[38] In the actual derivations of complex heads that Lopez (2015) posits, Roots become part of the complex head *via* IM, and not PC-based EM, so there is always a role for IM in creating complex heads. However, Lopez gives no convincing reason for why Roots, like the other suffixes, cannot form a complex head solely through EM.
Perhaps it is because such a derivation would exactly parallel lexicalist derivations. Perhaps it is because Roots must locally select their dependents and project a RootP, though if it is the latter, the reason is not convincing, since the selectional restrictions of other heads within the complex word are not satisfied locally, as we have pointed out.

of word-internal structure is something that we want to flesh out as an explanation of the differences between Korean and English. The proposal, in tandem with the thesis of Root-Domain Opacity, will allow us to understand the Korean-English differences as well as the differences between opaque and transparent predicates in Korean with respect to lexical integrity.

5 Complex head formation and vocabulary insertion

Standard DM posits that morphemes (feature complexes without phonological exponents) are the atoms (X^0) of a unified morphosyntactic computation, and that the insertion of phonological pieces that realize the morphemes (vocabulary insertion, VI) takes place after the morphemes have been collected into a complex head (X^0), whether the complex head formation takes place in core syntax (by head movement) or after syntax (by lowering).[39] It is also hypothesized that VI targets individual terminal nodes—that is, individual X^0's—within a complex X^0.[40]

Since morphology and syntax constitute a unified system, what would go wrong if VI was not mediated by the prior formation of complex heads? The answer is that syntactic structures would not be properly spelt out, since the phonological pieces would not be able to meet their insertion requirements. For example, in the commonly adopted view of English clause structure where T is separate from V in the syntax (we are glossing over the *v*/V distinction), the relevant structure prior to the formation of complex heads is the following (where XP could be an adverbial, and YP the external argument):

(51) ….T ….**XP**… [$_{VP}$ **YP** [$_{V'}$ V ….]]

Let's also assume the following (based on Halle & Marantz 1993) entry for a phonological piece that spells out T[+past]:

(52) [+past] ⟷ {*-t*}/ X + __ (where X = *dwell, buy*, *send,* etc.)

Let us now ask ourselves: could this piece be inserted directly in (51) where the VP is headed by *dwell*, but where the T has not formed a complex head (*via* Lowering, as standardly assumed) with the verb? If it were inserted in (51), the resulting string would be ill-formed (cf. (53a)), and would need to be repaired by *do*-insertion (cf. (53b)).

(53) a. *…[$_{T}$ *–ed*]…[$_{VP}$ …[$_{V}$ *dwell*]…]
b. …[$_{T}$ *do* + *ed*](= *did*)…[$_{VP}$…. [$_{V}$ *dwell*]…]

However, if a V-T complex head is formed prior to VI, the phonological piece for T can be inserted in accordance with its contextual requirements.

(54) …(T)…[$_{VP}$ …[$_{V}$ [$_{V}$ *dwell*] [$_{T}$ *–ed*]] …]

[39] A reviewer charges that this is incorrect, and that VI can take place either before or after complex head formation. I doubt that practitioners of DM would agree that 'early' or 'late' insertion of vocabulary items is not central to the theory. Late insertion is identified as a central tenet of DM (Halle & Marantz 1993; Embick & Noyer 2007), even though DM is not the only theory that adopts it.

[40] There are different algorithms of VI being entertained within approaches that are broadly similar to DM, including insertion of pieces on a contiguous region of adjacent heads, such as the 'spanning' idea of Svenonius (2012) and Merchant (2015), as well as the related idea of the insertion of vocabulary pieces targeting phrasal (XP) constituents, rather than X^0's (Ackema & Szendroi 2007).

What this indicates is that the formation of the V-T complex head is a *pre-requisite* to VI, since otherwise, V and T will not be adjacent.[41]

This simple exercise raises the following question. Is the formation of complex heads triggered by morphological requirements? The fact that complex head formation seems to be morphologically triggered was handled in early versions of Minimalism through the notion of strength of features. However, to the extent that syntactic computation should deal only in syntactically relevant features, using morphological strength to trigger an operation in syntax should raise methodological red flags. But if morphology doesn't trigger complex head formation, why does it need to take place? And why does it need to take place regardless of whether the complex head is created in syntax (head movement) or after syntax (lowering)?

The evolution of thinking about the nature of the fundamental structure-building operation in syntax (Merge) in later versions of Minimalism might provide an answer. Specifically, Chomsky (2008) has reverted from a strictly feature-driven (*aka* 'crash-proof') view of Merge to a view where Merge is essentially untriggered, free to apply (or not), with illegitimate outputs of Merge filtered out (or given some sort of interpretation if possible) at the interfaces. Since Move is an instantiation of Merge (Internal Merge), we assume that the operations creating complex heads, as instantiations of the (Internal) Merge operation, should likewise be untriggered.[42]

What this change buys us is the following. We do not need to posit that operations building complex heads are triggered by morphological properties. They are untriggered and apply freely. However, only the outputs where complex heads have been formed can properly feed VI and converge, since the conditions for insertion of bound forms (which are context-sensitive in most cases) will not be met without it. This means that in general, whenever the syntactic structure hypothesized to underlie a complex head places the components of such a head in non-adjacent positions, only the output where complex head formation has taken place can be the proper input to VI. This is almost always the case in a language like English.

5.1 Is complex head formation always needed?

Thinking along these lines, it becomes clear that if a language is consistently head-final in its syntax and the exponents of its bound forms are consistently suffixal, the output of syntax can feed VI directly *without complex head formation*. This is the situation in a language like Korean, where pre-insertion syntactic structures place heads in adjacent positions, as shown below for verbs and associated verbal functional heads.[43]

(55) $[_{CP} \ldots [_{MP} \ldots [_{TP} \ldots. [_{VP} \ldots\ldots\ldots V] T] M] C]$

[41] In the case of stranded T, *do*-insertion is available, but not all cases of stranded morphemes can make use of such strategies, as should be clear. So, we can say that in general, without complex head formation, VI of bound exponents cannot operate successfully.

[42] This is not an innocuous assumption, however, since there are constraints on the derivational mechanics of Internal Merge (in terms of search space, locality, etc.) and it is not obvious that the hypothesized modes of forming complex heads abide by these constraints. There are those that doubt the existence of head movement for precisely these reasons (Matushansky 2006). And lowering, another mechanism that creates complex heads in DM, is even less likely to abide by the mechanics of Internal Merge.
Based on these considerations, we may banish complex head formation from core syntax and relegate it to the interface between syntax and morphology. But such a move would jeopardize the key DM tenet that word-internal structure is built by syntax. We will not pursue this line of thinking in this paper further, however.

[43] In saying this, we assume that while Merge may not impose word order, the stage of syntax that feeds VI has order defined on it, since without this assumption, the centrality of strict syntactic head-finality coupled with suffixation (equivalently, strict head-initiality coupled with prefixation) will make no sense.
Notice that we cannot derive order in syntax solely through morphological requirements of bound form insertion, so we need some way of determining different "orders of major constituents" in syntax, whether through Kaynean manipulations or the word order parameters of X-bar theory.

The structure shown above can be spelt out via VI as *mek-ess-ta-ko* ('that (s/he) ate') (as shown in (56a)), satisfying the insertion requirements of the bound phonological pieces given in (56b). That is, even without V-raising (or lowering) to functional heads forming a complex head, an inflected verb string can be spelt out. And this is possible precisely because of the strict head-final character of Korean syntax and the consistently suffixal nature of its functional morphology.

(56) a. $[_{CP} .. [_{MP} .. [_{TP} \ldots [_{VP} \ldots [_{V}$ *mek-*$]]_{VP}$ $[_{T}$ *–ess*$]]_{TP}$ $[_{M}$ *–ta*$]]_{MP}$ $[_{C}$ *–ko*$]]_{CP}$

b. Vocabulary:

T[+past] ⟷ {*-ess-*} /X+ __	(X[V] = C-final V-stem)
M[+decl] ⟷ {*-ta*} /X+ __	(X[T] = *-ess-*, *-keyss-*, etc.)
C[+subord] ⟷ {*-ko*} /X+__	(X[M] = *-ta*, *-nya*, *-la*, etc.)

As some readers may be aware, independently of and predating the current discussion, scholars working on Korean and Japanese morphosyntax have debated the issue of whether the inflected verb complex is derived by V-raising/lowering, resulting in the creation of a complex head, or not, in which case the heads spelling out in an inflected verb remain separate throughout syntax and form a 'word' only in the morphophonological sense.[44] Evidence showing that an uninflected verb and its dependents can enter into coordination without the inflections (cf. (9b))—yielding suspended affixation—figured prominently in early arguments against V-raising/complex head formation in Korean (M-K Park 1994; J. Yoon 1994; 1997; J-M Yoon 1996).[45] What we just showed is that the algorithm of VI in DM does not require V-raising/complex head formation either.

In addition to the coordination paradigm, one of the most straightforward arguments against V-raising/complex head formation in Korean verbal inflection is provided by D. Chung (2009; 2011), who reasoned that if the structure of an inflected verb string is as shown in (56), an inflected verb without its dependents will never act as a constituent. This prediction is confirmed. A surface morphological word spelt out as an inflected verb (V-T-M-C sequence) does not act as a constituent for the purposes of movement (cf. (57d)) or deletion (cf. (58a)), just as clitic-host clusters (such as *I'll*, *should've*, etc.) fail to act as a unit in syntax.

And while the embedded object (cf. (57b)) and the entire embedded clause (cf. (57c)) can be moved, the inflected embedded verb cannot move while stranding its dependents, as seen in (57d). Neither can the inflected verb and the object undergo movement, as shown in (57e). This is predicted if moving the inflected verb requires moving all the dependents associated with it, a requirement that is met only in (57c).[46]

[44] In this debate, M-K Park (1994), J. Yoon (1994; 1997), J-M Yoon (1996) argued against V-raising, while E-Y Yi (1994) argued for it.

[45] Why does the coordination of uninflected V(P)s under a shared T constitute an argument against V-raising?

(i) Sip-nyen-cen-ey John-un kananha-**ko** acwu pichamhay-**ss**-ta (cf. 9b)
10-years-ago-LOC J-TOP poor-CONJ very miserable-PST-DECL

The reason is this. If V-raising were responsible for deriving the inflected verb, it must have applied only in the second conjunct, violating the across-the-board condition on movement out of coordinate structures. This implies that something other than V-raising has put the verb and its inflections together in the final conjunct.

If V-raising were to take place in coordinate structures like (i) in an across-the-board manner, it should derive a verb-less first conjunct, which some scholars (Koizumi 2000) have taken to constitute evidence for V-raising. Even if Koizumi is correct (but see Takano 2002), the fact that (i) is possible indicates that V-raising is at best optional. On a different type of evidence for the optionality of V-raising, see Han et. al (2007), though the evidence they provide is indirect, rather than direct, and subject to alternative interpretations.

[46] Can the uninflected verb move/scramble by itself to the left periphery of the matrix clause? Since head movement is local and clause-bound, it cannot.

A reviewer points out that (57d) would be an instance of improper movement of a complex head to a phrasal position, even under the V-raising account. While (57d) can be explained in that manner, the

(57) a. Cheli-nun [Tongswu-ka pap-ul mek-ess-ta-ko] sayngkakhanta.
C-TOP T-NOM meal-ACC eat-PST-DECL-COMP thinks
'Cheli thinks Tongswu had his meal.'

b. Pap-ul Cheli-nun [Tongswu-ka _ mek-ess-ta-ko] sayngkakhanta.
meal-ACC C-TOP T-NOM eat-PST-DECL-COMP thinks

c. [Tongswu-ka pap-ul mek-ess-ta-ko] Cheli-nun _ sayngkakhanta.
T-NOM meal-ACC eat-PST-DECL-COMP C-TOP thinks

d. *Mek-ess-ta-ko Cheli-nun [Tongswu-ka pap-ul _] sayngkakhanta.
eat-PST-DECL-COMP C-TOP T-NOM meal-ACC thinks

e. *Pap-ul mek-ess-ta-ko Cheli-nun [Tongswu-ka __] sayngkakhanta.
meal-ACC eat-PST-DECL-COMP C-TOP T-NOM thinks

Deletion/ellipsis is restricted to constituents, as widely assumed since the beginning of generative grammar. The following shows that while the entire embedded clause (CP) together with the dependents (subject, object) can be deleted (cf. (58c)), ellipsis cannot target just the inflected embedded verb (cf. (58a)) or the object plus the embedded verb (cf. (58b)).[47]

(58) Na-nun [John-i Mary-lul salangha-n-ta-ko] mitnunta.
I-TOP J-NOM M-ACC love-PRS-DECL-COMP believe
'I believe John loves Mary.'

a. *Haciman Bill-un [John-i Mary-lul ~~salangha-n-ta-ko~~] an-mitnunta.
but B-TOP J-NOM M-ACC love-PRS-DECL-COMP NEG-believes
'But Bill does not believe John loves Mary.'

b. *Haciman Bill-un [John-i ~~Mary-lul salangha-n-ta-ko~~] an-mitnunta.
but B-TOP J-NOM M-ACC love-PRS-DECL-COMP neg-believes

c. Haciman Bill-un [~~John-i Mary-lul salangha-n-ta-ko~~] an-mitnunta.
but B-TOP J-NOM M-ACC love-PRS-DECL-COMP NEG-believes

In sum, evidence pointing to the lack of complex head formation is robust in Korean, if Chung and the other scholars who argued against V-raising/complex head formation are on the right track.

We hypothesize therefore that the key difference between English and Korean morphology regarding lexical integrity resides in whether or not the output of syntax collects heads into a complex head before VI. Once a complex head is formed, its internal structure is opaque to syntax. However, when a string that is spelt out as a morphological word instantiates distinct X^0's not collected into a single complex head, the internal structure of the string will be fully visible to syntax, *pace* the effects of Root domain opacity and Word-internal phases.

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unacceptability of (57e) cannot, since here the string that is moved (=*pap-ul mek-ess-ta-ko*) seems to be a phrasal constituent. One could, however, object to this assumption and posit that the string cannot be a constituent since *–ko* is C but what is moved does not seem to be a CP, as the subject (=*Tongswu-ka*) is not included in the moved string, if we assume that CP cannot undergo remnant movement stranding the subject. Under this alternative, the above paradigm is neutral with respect to the issue of verb raising.

[47] The account predicts that it should be possible to delete the embedded verb plus the object while leaving the inflections intact. However, in this case, bound inflections will be stranded. A pro-form (such as the stem *kuleh*-) must be inserted to support the stranded inflections. Thus, we will get a form like the following:

(i) Haciman Bill-un [John-i **kuleh**-ta-ko] an-mitunta (*kuleh* replaces VP)
but B-TOP J-NOM be.so-DECL-COMP NEG-believes

A reviewer points out that (58a) can be accounted for if we assume that only XPs undergo ellipsis. While this may or may not be the case (consider gapping where X^0's can undergo ellipsis), the proposal fails to rule out (58b), where the deleted string seems to be a constituent (but see previous note on the possibility that the string targeted for ellipsis is a not constituent).

5.2 Transparent suffixes in Korean

We propose that transparent suffixes do not form a complex head with the bases to which they are attached. There is *no complex head formation* involving the base and the transparent suffix at all. Instead, the phonological pieces realizing transparent suffixes are inserted directly into the base syntactic structure, as schematically shown below:[48]

(59) a. $[_{MP} \ldots [_{TP} \ldots [_{AP} [_{nP} ([_{RelC} \ldots\ldots]) [_{nP} [_{RootP}$ **Root] n]] A] T] M]**

b. Vocabulary:
Root ⟷ {*kwunin*}
n ⟷ {ø} /X[Root] + __
A ⟷ {*-tap-*} / X[N, n, D] + __
T[+ past] ⟷ {*-ass-*} /X + __ (X[V,A] = C-final stem)
M[+ decl] ⟷ {*-ta*} /X + __ (X[T] = *-ess-*, *-keyss-*, etc.)

The following is the structure after VI, yielding the string pronounced *kwunin-taw-ass-ta* ('is every bit a soldier (that s/he is)'), after allomorphy rules.[49]

(60) $[_{MP} [_{TP} [_{AP} [_{nP} ([_{RelC} \ldots]) [_{nP} [_{RP} [_{R}$ ***kwunin***$]]_{RP} [_{n}$ ***ø]*** $]_{nP}]_{nP} [_{A}$ ***–taw-***$]]_{AP} [_{T}$ ***–ass-***$]]_{TP}$ $[_{M}$ ***-ta***$]]_{MP}$

Though the base and the suffix are contained within the same surface morphological word, they do not form a syntactic constituent. The fact that a relative clause can modify just the base of a transparent suffix is evidence that the base of the predicate forms a nominal constituent with the relative clause to the exclusion of the suffix, as indicated below.

(61) Cheli-nun [[mikwuk-eyse o]-n **kwunin**]-**tap**-ta.
C-TOP US-from come-REL soldier-be.like-DECL
'Cheli acts every bit like a soldier from (trained in) the US.'

The analysis also predicts that the string *kwunin-tap-* should not behave as a complex head (X^0/A^0), just as an inflected verb fails to behave as a constituent without its dependents. The first evidence comes from the preverbal negative marker *an-*, which we may assume prefixes to an X^0. If *kwunin-tap-ta* is an X^0, it should be possible to prefix *an-* before it. As (62a) shows, this is impossible. Instead it is the form with *an-* occurring before the suffix that is acceptable, which shows that the suffix is itself a syntactic atom (X^0). By contrast, *an-* can be prefixed to opaque predicates, but cannot occur in the juncture between the base and the suffix (cf. (62b)). This, too, is predicted.[50]

[48] We are assuming T can take AP directly as complement and also positing the 'late insertion' of Roots, for expository purposes. We also assume that a relative clause is adjoined to nP.

[49] A reviewer asks why, if there is no complex head formation, a case-marker cannot be inserted after *kwunin*.

(i) *kwunin-**i/ul-**taw-ass-ta
soldier-NOM/ACC-be.like-PST-DECL

One way to account for it is to encode this as a context-sensitive feature on the insertion of transparent suffixes. That is, *–tap-* is inserted as sister to X that is a nominal that is not case-marked (where the nominal does not have the final slot nominal suffixes, if we state it in morphological terms). Vocabulary pieces spelling out predicates that are not bound (such as *toy-ta* 'become') are not subject to such restrictions and allow case-marked nominal complements.

[50] The acceptability markings indicate the relative degree of acceptability of the two forms that are in contrast. Long-form negation (auxiliary negation) is better than preverbal, Short-form, negation. Of the opaque suffixes, *–sulep-* sometimes allow *an-* prefixation. This is another indication that *–sulep-* is turning into a transparent suffix.

(62) a. Cheli-nun ….
C-top
*__an__-kwunin-tap-ta vs. kwunin-__an__-tap-ta
NEG-soldier-be.like-DECL soldier-NEG-be.like-DECL

b. I kkos-un ….
this flower-top
__an__-hyangki-lop-ta vs. *hyangki-__an__-lop-ta
NEG-fragrance-char.by-DECL fragrance-NEG-char.by-DECL

We have provided evidence showing that *kwunin-tap-(ta)* is not an X^0/A^0, but Kim et al. (2008) argue otherwise, based on the predicate reduplication construction. They assume that the reduplicated predicate is an X^0. Since the string *kwunin-tap-(ta)* is possible as the reduplicated predicate, they argue that it must be an X^0.

(63) Cheli-nun yongkamha-n kwunin-tap-ki-n **kwunin-tap**-ta.
C-TOP brave-REL soldier-be.like-NML-TOP soldier-be.like-DECL
'Cheli behaves like the brave soldier he is.'

The problem with this argument is that it rests on a faulty premise. J-M Jo (2013) argues that the reduplicated portion of the predicate reduplication construction is always phrasal (XP), not an X^0. If he is correct, the ability to occur in this position cannot be a diagnostic of X^0 status. As evidence for the phrasal status of the reduplicated string, Jo points out that alongside (63), we can have the following, where a string larger than a word (*yongkamha-n kwunin-tap-)* occurs in the reduplicated position.

(64) Cheli-ka yongkamha-n kwunin-tap-ki-n **yongkamha-n**
C-NOM brave-REL soldier-be.like-NML-TOP brave-REL
kwunin-tap-ta.
soldier-be.like-DECL
'Cheli behaves like the brave soldier he is.'

Jo's argument is that even when an apparent X^0 is found in the reduplicated position, it is still phrasal, and results from deletion of non-head constituents, as indicated below.[51]

(65) Cheli-ka [[yongkamha-n kwunin]-tap]-ki-n [[~~yongkamha-n~~ kwunin]
-tap]-ta (=(63))

What is interesting is that the transparent suffix *tap-* alone can be reduplicated, whereas this option is unavailable for opaque suffixes:

(66) a. Cheli-ka yongkamha-n kwunin-tap-ki-n-**tap**-ta.
C-NOM brave-REL soldier-be.like-NML-TOP-be.like-DECL
'Cheli behaves like the brave soldier he is.'

b. *I kkos-un acwu hyangki-lop-ki-n-**lop**-ta.
this flower-TOP very fragrance-be.char.by-NML-TOP-be.char.by-DECL
'This flower has a sweet fragrance.'

[51] Instead of deletion of non-head constituents, we may relax the notion of identity between the reduplicated portion and the antecedent and allow non-identical reduplicants as long as there is an entailment relation between the target (=XP) and the reduplicant (=ZP). Under this alternative, deletion is not required. The relevant parse of (63) would be as follows:

(i) Cheli-ka [[$_{XP}$ yongkamha-n kwunin-tap]-ki-n [[$_{ZP}$ kwunin]-tap]-ta

c. I kkos-un acwu hyangki-lop-ki-n
this flower-TOP very fragrance-be.char.by-NML-TOP
hyangki-lop-ta.
fragrance-be.char.by-DECL
'This flower has a sweet fragrance.'

Under Jo's analysis, this contrast is predicted. (66a) can be derived by constituent deletion (of the NP complement of A) as shown in (67a), while the deletion that yields (66b) targets a non-constituent string, as shown in (67b) below.

(67) a. Cheli-ka [$_{AP}$ [$_{NP}$ yongkamha-n kwunin]-[$_{A}$ tap]]-ki-n-
[$_{AP}$ [$_{NP}$ ~~yongkamha-n kwunin~~]-[$_{A}$ **tap**]]-ta
b. *I kkos-un [$_{AP}$ acwu [$_{A}$ hyangki-lop]]-ki-n-[$_{AP}$ ~~acwu [$_{A}$ hyangki~~-**lop**]]-ta

In sum, there is no evidence indicating that *kwunin-tap-* is an X^0, while evidence exists to show that *–tap-* is an X^0 and that the base of *–tap-* is the head noun of an NP, forming a constituent together with its dependents. All of this is predicted if *kwunin* and *–tap-* do not form a complex head and remain separate atoms throughout the derivation.

Thus far, we have capitalized on the strict head-final alignment of heads in syntax and morphology in Korean to develop an analysis of surface morphological words whose components remain as separate atoms throughout the derivation. It is in this situation that the internal structure of a surface morphological word remains transparent in syntax.

While Korean morphosyntax is characterized by strict head-finality, we predict a similar state of affairs will be found in a language that is strictly head-initial in syntax and has prefixing functional morphology. Denominal predicates exhibiting bracketing paradoxes in Indonesian discussed in Sato (2010) seem to be the relevant examples. As Sato (2010) shows, denominal predicates derived with the prefix *ber-* (glossed BER below) allow stranded modifiers (example 23 from Sato 2010: 393).

(68) a. Ibu-ku mempunyai [$_{NP}$ ***baju*** garis-garis warna biru buatan
mother-my have cloth stripe-RED color blue made.in
Indonesia yang mahal].
Indonesia that expensive
'My mother has an expensive blue striped cloth made in Indonesia.'

b. Ibu-ku ber-***baju*** [$_{\alpha P}$ garis-garis warna biru buatan Indonesia
mother-my BER-cloth strip-RED color blue made.in Indonesia
yang mahal].
that expensive
'My mother wears an expensive blue striped cloth made in Indonesia.'

Sato (2010) analyzes (68b) through syntactic incorporation (complex head formation). He gives two arguments in support of the analysis, and against conceivable alternatives. The first argument is that the stranded modifier cannot be interpreted as containing a null headed NP, which has been proposed as an analysis of stranded modifiers in noun incorporation in some languages (Rosen 1986). The reason is that null-headed noun phrases do not exist in Indonesian (Sato 2010: 398, example 34). A second argument for the syntactic nature of incorporation is that the nominal base of the denominal predicates can introduce discourse referents, as shown below (example 40a of Sato 2010: 399).

(69) Ia ber-***sepatu***$_i$ hitam sekarang. Ia akan menyumbangkan-***nya***$_i$ ke
s/he BER-shoe black now. S/he will donate-them to
gereya nanti.
church later
'S/he is wearing black shoes. S/he will donate them to a church later.'

In other words, outbound anaphoric islands can be violated. Though outbound anaphoric islands are not reliable tests of LI, as we saw earlier, it is nevertheless instructive that compounding does not allow violations of the condition (example 41 of Sato 2010: 400).

(70) *Saya mem-beli botul-***susu**$_i$ tapi tidak me-minum-***nya***$_i$.
I AV-buy bottle-milk but NEG AV-drink-it
'I bought a milk-bottle but I didn't drink it(=milk).'

Though Sato (2010) proposes an incorporation/complex head formation analysis of denominal predicates, given that the prefixal predicate *ber-* and the head of the noun phrase complement are adjacent, an alternative analysis that does not countenance complex head formation is conceivable, where the prefix and the head noun remain separate entities and form a word only in the morphological/prosodic sense. Sato (2010) considers such an alternative, which he dubs the clitic analysis. He concludes that since *ber-* has the properties of affixes and not clitics in the sense of Zwicky & Pullum (1983), the analysis that treats *ber-* as a clitic that does not form a complex head with the nominal base will not work.

This conclusion is somewhat odd, since the clitic/affix distinction has no theoretical importance in a framework like DM (a point emphasized by Embick & Noyer 2001). Furthermore, the irrelevance of the traditional diagnostics for affixes versus clitics in diagnosing the presence vs absence of complex head formation is shown by the verbal inflectional suffixes in Korean that mark tense and mood, which display typical affix properties in the sense of Zwicky & Pullum (1983), and yet also display evidence indicating that they do not undergo complex head formation with the bases to which they are attached, as we have seen. Therefore, evidence that adjudicates between the incorporation/complex head analysis and the 'clitic' analysis of Indonesian denominal predicates would need to come from further tests of lexical integrity, including coordination. Pending the results of these additional tests, the facts of Indonesian are at least consistent with an analysis where the components of the morphological word remain separate atoms in the syntax. And the reason this is possible is because the linearization of heads in syntax can feed VI directly without the heads having to undergo complex head formation.

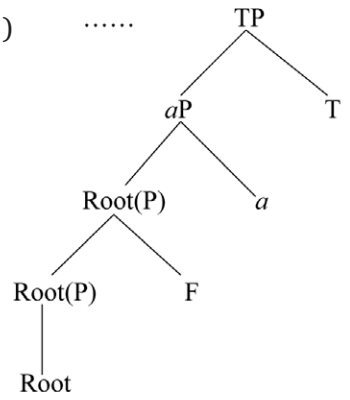
The intuition that a harmonic alignment of heads in syntax and morphology can give rise to deep violations of lexical integrity is not novel, and has been exploited in previous works in different ways. Di Sciullo & Williams' (1987) Co-analysis is founded on this intuition. J. Yoon (1996) capitalizes on this intuition in the context of a comparative analysis of the morphosyntax of phrasal nominalizations in English, Spanish, and Korean. The framework of morphology-syntax developed in Ackema & Neeleman (2004) also exploits it. The intuition behind lexical sharing analyses of the Korean copula and related suffixes is similar (Westcoat 2002; Kim et al. 2008). Two

syntactic atoms realized as a single morphological word must occur in syntactically adjacent positions.[52]

5.3 Opaque suffixes in Korean

Let us turn to the schematic syntactic structure that underlies opaque predicates such as *hyangki-low-ass-*(*ta*) (fragrance-be.char.by-DECL, 'was fragrant') under the assumptions we adopted in the paper.

(71)



T[+past] ←→ {*-ass-*} /X+ ___ (X[V,A] = C-final stem)[53]
a ←→ {ø}/X[Root]+ ___
F ←→ {*-lop-*}
Root ←→ {*hyangki*}

Note that the phonological pieces that realize the morphemes can be inserted with or without the formation of a complex syntactic head. The question therefore arises whether the syntactic opacity of the base-affix juncture (the juncture between Root and F above) requires us to posit complex head formation.

The answer is that complex head formation is not necessary to explain opacity. Even if phonological pieces are inserted directly in (71), we still predict the opacity of the Root-affix juncture to syntactic processes, since it lacks syntactically parsable features. Therefore, while there is no evidence against the formation of complex heads in the case of Roots and Root-level affixes, there is no evidence for it either. Nor is there a theoretical reason to posit complex head formation, since the thesis of Root domain opacity is independent of whether or not a complex head is formed.

[52] The idea of inserting phonological pieces into spans (Svenonius 2012; Merchant 2015) also requires a span of heads spelt out by a phonological piece to be contiguous. However, since spans can be fed by complex head formation (via head movement), there is no expectation that spans should correlate with strict alignment of heads in morphology and syntax. Another difference is that in the system sketched above, we are not inserting pieces into spans, but to terminal nodes.

Another system where the terminals that spell out a surface 'word' can correspond to complex syntactic configurations is Julien (2002). Koopman (2005) employs a similar system to account for Korean morphotactics in her response to Sells (1995). However, her analysis is couched in a Kaynean framework with unconstrained movements, making the correlation between syntactic and morphological headedness hard to maintain. Besides, in her work, there is no discussion of the difference in syntactic atomicity between words that spell out complex heads and those that do not.

The framework of Autolexical Syntax (Sadock 1991) allows morphology-syntax mismatches that involve 'crossed association lines' between the two representations, and is hence less restrictive than the approaches mentioned in the text where essentially, no crossing of association lines between syntax and morphology is permitted.

A further difference between the system we employ and similar approaches is the following. Spanning and lexical sharing do not require that forms that realize two (or more) adjacent syntactic atoms be morphologically complex, while in our system, since each atom/X^0 is the locus of insertion, a surface morphological string that spells out two adjacent syntactic atoms must be multi-morphemic. A full discussion of the differences obviously lies beyond the scope of the paper.

[53] We are using F to mark the Root-level suffix *–lop-*. By hypothesis it derives another Root, which has to be categorized (by the null adjectivalizing suffix) before it can combine with T.

6 Conclusion

It is time to take stock. In order to explain the selective transparency of word-internal junctures to syntactic processes in Korean while at the same time making sense of the complete opacity of all such junctures in English and other languages, we developed the following system.

(72) a. There is a unified morphosyntax with morphemes (feature complexes) as the atoms of computation.
b. Roots (simple or complex) and Root + first categorizing affix junctures are invisible to syntax, because they lack syntactic properties.
c. There are mechanisms of complex head formation that combine morphemes (X^0's) into a complex X^0.
d. Vocabulary insertion (VI) of bound exponents is local and context-sensitive. Complex head formation may need to take place to meet the demands of VI.
e. Syntactic and morphological headedness must align for VI to operate without complex head formation.
f. When the atoms of a unified morphosyntax form a complex head, its internal structure is opaque to syntax, even if it contains syntactically visible features. That is, syntactic opacity holds of the complex head as a whole.[54]
g. When the atoms do not form a complex head, the morphemes that spell out a single surface morphological word remain separate atoms in syntax and the internal structure of the morphological word is fully visible to syntax, *pace* the effect of Root-domain opacity and Word-internal phases and morphophonological differences between free and bound exponents.[55]

If the above summary is correct, there is much truth to the lexicalist position that takes complex morphological words to be opaque domains in syntax. (72f) decrees that lexical integrity holds for morphologically complex words. However, unlike Lexicalism, our system does not predict that *all* word-internal domains will be opaque to syntax. In our system, there is a word-internal domain that is always opaque to syntax. This is the Root domain (including Root + first categorizing affix). Whether or not larger word-internal domains containing syntactically accessible features will be opaque to syntax depends on the presence or absence of complex head formation. If VI creates a surface morphological word without the mediation of complex head formation, the internal structure of the

[54] A reviewer asks how the proposed system can account for the differences between 'inner' and 'outer' morphology. The distinction between Root-level and Word-level affixes is one way to account for morphotactics, if by the 'inner' vs. 'outer' distinction we mean differences in morphotactics. However, purely morphological or phonological differences between the two types of affixes will not be accounted for by the morphosyntactic assumptions introduced here.

[55] A reviewer points out that the intuition that transparent suffixes do not form a complex head with their bases despite being 'words' and that this is responsible for violations of LI can be worked out in "any theory that adopts a strictly modular view of grammar, where corresponding structures in different modules need not be strictly isomorphic." For instance, Ackema (2014), addressing the differences between syntactic and lexical causatives in Japanese, which behave in a manner similar to transparent versus opaque suffixes, concludes that the fact that syntactic causatives allow LI violations is not relevant to the atomicity debate because syntactic causative suffixes constitute a word with their bases only in morphophonology, while LI pertains to morphosyntactic words.
My goal in this paper was to try to make sense of the selective violations of LI within the architectural assumptions of DM, and not to claim that DM is the only theory that can model them. In fact, as the ensuing discussion reveals, the architecture of DM makes it difficult to explain LI in a non-stipulative manner. There are other theoretical architectures that are much better suited for this job.

word is fully visible to syntax. Lexicalism does not predict this, since for it, the domain of opacity should be the entire surface morphological word in all languages.

Now, to the extent that we have used largely DM assumptions to account for the differences between transparent and opaque predicates in Korean as well as the difference between Korean and English with respect to how lexical integrity works, we can say that DM has proven capable of providing an account of the data from lexical integrity that seemed to pose a serious challenge to it. Root domain opacity and the associated thesis of Word-internal phases provided an account of the opaque vs. transparent distinction in Korean. The different ways in which VI can apply to the output of syntax (cf. (72d, e)) in turn accounted for the difference between Korean and English. These tenets are consistent with the overall architecture of DM and required no major modifications to the theory.

However, a sore thumb sticks out, which is the supposition that the internal structure of complex heads must be inaccessible to syntax even when it contains syntactically accessible features. It is only when there is no complex head formation that the internal structure of a morphological word containing syntactically accessible features becomes transparent to syntax. That is, unless (72f, g) can be explained on a principled basis, the overall account still rests on unexplained stipulations.

So, the question is why complex heads should be opaque domains in syntax. The lexicalist answer is well-known. Complex words are constructed in morphology *prior to*, or *independently of*, syntax. The internal structure of complex words is invisible to syntax because it is hypothesized that the entire complex head is inserted as a syntactic atom in X^0 slots.

In evaluating the lexicalist answer, it is important to note that the thesis of syntactic atomicity of complex heads is a stipulation that does not follow from anything else.[56] Therefore, since the account of the syntactic opacity of complex words in lexicalism rests on a stipulation, the argument could be made that a similar stipulation should be granted to a theory like DM, to level the playing field.

The problem is that adding such a stipulation to guarantee the opacity of the internal structure of complex heads under DM assumptions is not easy, and ends up conflicting with other key tenets of the theory. The reason is the following. DM *inverts* the relative timing of the creation of word-internal structure and syntactic structure posited in lexicalism. Unlike lexicalism, complex heads (X^0's) are created *after*, not before, syntactic structure is built. So even if we added a stipulation decreeing the invisibility of sub-X^0 structure to syntactic principles upon the creation of a complex head, we could not guarantee the opacity of word-internal structure to syntactic principles. This is because syntax could have had access to the component heads *before* they enter into the creation of complex head. The problem is that complex heads are formed too late in the syntactic derivation for any condition guaranteeing its internal opacity to restrict syntactic dependencies established in earlier cycles/phases. The ban on access of internal structure would not work unless we give up cyclicity.

The system in Lopez (2015) discussed in Section 4.2 held the potential to account for the internal opacity of complex heads to syntactic processes, as it was designed specifically

[56] In systems like Selkirk (1982) the structure-building mechanisms of morphology and syntax are taken to be similar, if not identical (w-syntax vs. s-syntax), so that the atomicity of words is stipulated (i.e., Word Structure Autonomy Condition). Anderson (1992), by contrast, thinks that atomicity could be a consequence of the fact that word-internal structure does not exist. Since there is no structure, there is nothing to access. However, the case for his 'a-morphous' morphology is far from established. Besides, the internal structure of compounds, which are acknowledged to have internal structure, remains inaccessible to syntax. Similarly, the internal structure of phrases reanalyzed as words ([*sit-on-the-sidelines*] *policy*), whose internal structure is clearly syntactic, remains syntactically inaccessible. Thus, syntactic atomicity is a consequence of being inserted in an X^0 slot (cf. de Belder & van Cranenbroeck 2015), and not due to a fundamental difference in the licensing mechanisms of structure above and below the X^0 level.

for that purpose. However, as pointed out earlier, the system does so by creating complex heads acyclically, mimicking the lexicalist position. It also suffers from the fact that there is no way to guarantee that all complex words will be created acyclically, prior to syntax, a tenet that is crucial to ensuring the opacity of word-internal structure. Other ways of guaranteeing the opacity of word-internal structure consistent with the overall tenets of DM must be sought, the pursuit of which we must leave for the future.

Regardless, one clear lesson remains. Whatever the correct solution turns out to be, it should be clear that the facts of lexical integrity remain critical to gauging the adequacy of competing approaches to the morphology-syntax interface.

Abbreviations

ACC = accusative, ADV = adverbial ending, APPER = apperceptive, AV = actor voice, COMP = complementizer, CONJ = conjunction, COP = copula, CP.PL = copied plural, DECL = declarative, DEM = demonstrative, DM = discourse marker, GEN = genitive, IMP = imperative, INCH = inchoative, INST = instrument, LOC = locative, NEG = negation, NML = nominalizer, NOM = nominative, PL = plural, PRS = present tense, PST = past tense, RED = reduplicative morpheme, REL = relative/adnominal/adjectival ending, TOP = topic.

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The author has no competing interests to declare.

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