

ON THE JUNCTION BETWEEN PREDICATES AND ADVERBS IN KOREAN WITH -KEY

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1 Introduction

It has been controversial whether the suffix *-key* derives an adverb or a predicate. The controversy arises from the fact that it is not clear whether *-key* is as an adverbializer or as a predicator. This paper attempts to provide an answer of how the so-called *-key* marked items behave differently. I argue that *-key* derives both adverbs and predicates. Then, the meaning differences between adverbs and predicates are explained by the notion of entailment.

This paper is organized as follows. Section 2 begins with the brief discussion of morphological processes of adverbialization in Korean. In this section, I overview previous works by looking at the issue of how *-key* has been analyzed. In Section 3, it is shown that *-key* derives both adverbs and predicates by looking at its distribution in primary and secondary predication constructions. The distinction between adverbs and predicates is explained by entailment. In Section 4, I argue that this analysis proves that some examples cited as predicates are in fact adverbs.

2 Previous Works

It has been assumed that Korean has two types of adverbials. Both of them are derived from verbs by adding the suffixes, *-i* or *-key*. Consider the example (1) from Jang (1997: 149). I adopt the convention underlying the so-called *-key* or *-i* marked items.

- (1) a John-*i* ppal-i taln-ta
 b John-*i* ppalu-key taln-ta
 John-Nom fast ran-dec

The adverb *fast* is formed by adding the suffixes, *-key* or *-i* to the verb stem *ppalu*. There are few adjectives in Korean. Consider the example (2).

- (2) a ku umsik-*i* maypta
 the food-Nom be-spicy
 ‘that food is spicy’
 b ku cip-*i* khuta
 that house-Nom big
 ‘that house is big’

Despite their English translations, the words *maypta* ‘spicy’ and *khuta* ‘sick’ are verbs that take tense markers and other types of inflectional endings used for verbs. Based on this fact, the adverbialization has been typically formulated by adding either *-i* or *-key* to verb stems in Korean.

Compare Korean with English. In English, adverbs are derived from adjectives by attaching a morpheme *-ly*, whereas in Korean, they are derived from verb stems by adding the suffix *-i* or *-key*, as illustrated in (3)

- (3) English [adjective] +ly
 Korean [verb stem] + (key or i)

Given this assumption, it has been analyzed that *-key* is an adverbializer as *-i*. Many linguists analyze *-key* as a syntactic adverbializer to make its root function as an adverb. This is based on Choe's (1928) idea that both *-key* and *-i* are adverbial suffixes, as shown in (4)

- (4) a na-nun ppalu-key talliessta
 I-top fast-ADV ran
 'I ran fast'
 b ku-nun nulikey kelessta
 he-top slow-ADV walked
 'I walked slowly'

However, the traditional approach that analyzes *-key* as adverbial suffix has been challenged by Jang (1997), who argues that *-key* derives a predicate. He argues that any *key*-marked items are the predicates, not the adverbs. Consider the example (5)-(6) from Jang (1997, 154)

- (5) a * John pressed the can flatly
 b John pressed the can flat
- (6) a *John-un kkangthong-ul napcaki nwul-ess-ta
 b John-un kkangthong-ul napcakhakey nwul-ess-ta
 John-top can-ACC flat press-Pst-Dec
 'John pressed the can flat'

Jang (1997) argues that as in English, the adverb *napcaki* 'flatly' cannot be a predicate of the resultative subject *kkangthong* because an adverb cannot be predicated of a noun argument directly. That is why (5a) and (6a) is not grammatical, while in contrast (5b) and (6b) are grammatical. (6b) shows that *napcakhakey* 'flat' is predicated of the noun argument *kkangthong* 'the can' in Korean. The fact leads him to argue that as in English, *napcaki* 'flatly' is an adverb while *napcakhakey* 'flat' is a predicate. In addition, he shows additional evidence in other secondary predication construction, as illustrated in (7). The examples come from Jang (1997, 153)

- (7) a na-nun ku-lul *solcihu / solcikhakey saygkakhanta
 I-top he-acc honestly honest consider
 'I consider him *honestly/ honest' (small clause)
 b John-i mwulkoki-lul *sinsenhu / sinsenhakey mekessta
 John-nom fish-acc freshly / fresh ate
 'John ate the fish *freshly/ fresh' (depictive construction)

Jang's argument is as follows. In English, the adverbs *honestly*, *freshly* are not predicated of the direct object NPs, *him*, *the fish*, while in contrast, the adjectives *honest*, *fresh* are secondary predicates whose predication subjects are the direct object NPs, *him*, *the fish*. The same holds true in Korean. The fact that the direct object NPs, *ku* 'he', *mwulkoki* 'fish' are predicated of the *-key* marked items

solcukhakey ‘honest’, *sinsenhakey* ‘fresh’, not of the -1 marked items *solcukhi* ‘honestly’, *sinsenhi* ‘freshly’ supports the assumption that -key derives predicates, not adverbs. However, while he provides convincing evidence that -1 marks adverbs but not predicates, and -key can mark predicates, he fails to show that -key can also mark adverbs. In this paper, I argue that -key in fact derives both predicates and adverbs. If so, there emerges a question of how the different functions of -key are distinguished from each other, despite of their morphological identities. I assume that the answer is entailment.

3. Entailment

There are various ways to define the notion of entailment. Entailment and presupposition are two important kinds of judgements about implication relations between the meaning of sentences. Entailment is one species of the more general relation of implication. For example, when A entails B, we often say that A implies B. We could say that someone’s assertion of A implies B, or that the speaker uttering A implies B. To imply B is to suggest that B is true. In other words, to offer support for the inference that B is true is to assert a sentence A that actually entails B, which indicates that B is true. The inference that B is true is supported directly by that information’s being a part of the information A conveys. That is, given A, we can deduce B. However, entailment is influenced by some variables. Consider the example (8) from Chierchia & McConnell-Ginet, 1991,17)

- (8) a This is big
- b This is a sperm whale
- c This is a big sperm whale

Suppose that the above sentences are uttered with reference to a particular object. In such a situation, if the sentences of (8a) and (8b) are true because the reference *whale* is in fact big and is a sperm whale, the sentence of (8c) must be true. It is impossible to utter the first two sentences ((8a) and (8b)) and then to deny the third ((8c)). In this case, the pair (8a, 8b) entails (8c). However, as pointed by Chierchia and McConnell (1991), suppose that the particular sperm whale is in size not bigger than the female whale which is small. In such situation, it is reasonable to say that the pair (8a, 8b) does not entail (8c). In this sense, Chierchia & McConnell-Ginet (1991,18) define the notion of entailment as follows

- (9) A entails B =
 - (a) whenever A is true, B is true
 - (b) the information that B conveys is contained in the information that A conveys
 - (c) a situation describable by A must also be a situation describable by A
 - (d) A and not B is contradictory (cannot be true in any situation)

Among them, in this paper, I will analyze the data based on (10a). This refers to a relation between a pair of sentences such that the truth of the second sentence necessarily follows from the truth of the first. Following Chierchia & McConnell-Ginet (1991), the entailment is defined as follows. See the definition (10) in the next page.

(10) Entailment

A sentence expressing proposition X **entails** (\Rightarrow) a sentence expressing proposition Y if the truth of Y follows necessarily from the truth of X
(a proposition X entails a proposition Y if the truth follows necessarily from the truth of X)

Let us look at (11) (11a) shows that if the sentence *John ate all the kippers* is true, the sentence *someone ate something* is necessarily true. One cannot both assert the first and deny the second. The same holds true in (11b) and (11c). If the sentence *John killed Bill* is true, the sentence *Bill died* is true, If the sentence *I can see a dog* is true, the sentence *I can see an animal* is true.

- (11) a John ate all the kippers (X) \Rightarrow Someone ate something (Y)
- b John killed Bill (X) \Rightarrow Bill died (Y)
- c I can see a dog (X) \Rightarrow I can see an animal (Y)

However, presupposition involves more than simple implication in that presupposition requires a family of implications, not all of which can be licensed by an entailment. Consider following example (12)-(13) from Chierchia & McConnell-Ginet (1991: 24-25).

- (12) a It was Lee who got a perfect score on the semantics quiz
- b Someone got a perfect score on the semantics quiz

- (13) a Lee got a perfect score on the semantics quiz
- b Someone got a perfect score on the semantics quiz

In the cleft sentences of (12), (12a) not only entails but also presupposes (12b). However, in (13), (13a) entails (13b), but does not presuppose (13b). This difference between entailment and presupposition indicates that presupposition requires a family of implications. That is why (13a) that does not have a family of implications does not presuppose (13b). Based on this, in recent semantic discussion, entailment has come to be contrasted with presupposition, on the grounds that different consequences follow from either of the sentences being false. Consider another example (14)-(15).

- (14) a I can see a cat
- b I can see an animal

- (15) a he has stopped smoking
- b he has smoked

If (14a) is false, the notion of entailment requires that the sentence *I can see a cat* may be true of false, but the notion of presupposition requires that if the first sentence is false, the second must be true. For example, in (15), if (15a) is false, (15b) is true. Thus, (15a) presupposes (15b).

In this section, I have discussed two types of logical relationships between statements, entailment and presupposition. In this paper, only the notion of entailment will be employed as a means for analyzing the data. In the next section, I will analyze the -key marked items by looking at the two types of constructions, namely primary and secondary predication construction.

4. Analysis

Primary Predication Construction (PPC) involves only one predicate with additional arguments such as external and internal arguments. One of main functions of adverbs is to modify the mode of action caused by a verb. For example, in the sentence ‘I walked slowly’ means that I walked in a slow manner. This is true in Korean, as illustrated in (16)

- (16) a na-nun ppalu-key talliessta
 I- top fast run
 ‘I ran fast’
 b John-un Mary-lul se-key ttelessta
 John-top Mary-acc strongly hit
 ‘John hit Mary strongly’
 c John-un pwusilenha-key ilhayassta
 John-top diligently worked
 ‘John worked diligently’

In the example (16a), the –key marked item is an adverb. It denotes a manner of the event of running caused by the verb *talli* ‘run’. Similarly, in (16b) and (16c), both the –key marked items, *sekey* ‘strongly’, *pwusilenhakey* ‘diligently’ are the adverbs which modify the events, hitting and working, respectively. If so, how can we support the assumption that the –key marked items in (16) are not predicates, but adverbs? The function of –key as an adverbializer is clearly shown if we adopt entailment. Take (16a) as an example. The notion \Rightarrow indicates that a previous sentence entails a following sentence, while the notion \models does that a previous sentence does not entail a following sentence. For easy understanding, the same sentence is repeated twice.

- (17) a na-nun ppalu-key talliessta \Rightarrow a’ na-nun talliessta
 I- top fast run I- top ran
 ‘I ran fast’ ‘I ran’
 a na-nun ppalu-key talliessta \models b’ na-nun ppalu-ta
 I-top fast ran I-top fast-dec
 ‘I am fast’

As shown in (17), if (17a) is true, (17a’) is necessarily true. Thus, the former entails the latter. However, (17a) does not entail (17b’). This shows that *ppalkey* lacks its predication subject but functions as an adverb which modifies the event of running. The same holds in (16b), as illustrated in (18)

- (18) a John-un Mary-lul se-key ttelessta \Rightarrow a’ John-un Mary-lul ttelessta
 John-top Mary-acc strongly hit John-top Mary-acc hit
 ‘John hit Mary strongly’ ‘John hit Mary’
 a John-un Mary-lul se-key ttelessta \models b’ Mary-ka seyta
 John-top Mary-acc strongly hit Mary-nom strong-dec
 ‘John hit Mary strongly’ ‘Mary was strong’
 a John-un Mary-lul se-key ttelessta \models c’ John-un seyta
 John-top Mary-acc strongly hit John-top strong
 ‘John hit Mary strong’ John was strong

In (18), (18a) does entail (18a') However, (18a) does not entail when either external or internal argument is predicated of the -key marked item, *sekey* (18a) entails neither (18b'), nor (18c') This entailment indicates that *sekey* 'strongly' is not a predicate but an adverb, which modifies the event of hitting denoted by the verb *tteli* 'hit' The same holds in (16c) (19a) entails (19b) but does not entail (19b'), as illustrated below

- | | | | | |
|--------|---|----|----|--|
| (19) a | John-un <u>nulikey</u> ilhayassta
John-top diligently worked
'John worked slowly' | => | a' | John-un ilhayassta
John-top worked
'John worked' |
| a | John-un <u>nulikey</u> ilhayassta
John-top diligently worked
'John worked slowly' | => | b' | John-un nulita
John-top slow
'John is slow' |

So, based on the facts, I assume that as Jang (1997) pointed out, -key marked items are adverbs in PPC However, I argue that -key derives both adverbs and predicates in Secondary Predication Construction (SPC)

In English SPC, the string V-NP-ADJ corresponds to the verb phrase of several different construction types, among these are the causative, the small clause, the depictive, and the resultative, as illustrated in (20)

- (20) a Causative Tom made me happy
 b Small clause Mary consider Tom honest
 c Depictive Mary ate the food cold
 d Resultative Tom wiped the window clean

The sentences of (20) appear identical on the surface-each contains a subject NP, a verb, an Object NP, and an adjectival phrase modifying the NP However, the thematic relations between the verb and the following NP and between the verb, and adjective vary, as does the interpretation, according to construction type Let us look at the corresponding Korean SPCs

- (21) a Tom-i na-lul hangpokha-key hayessta
 Tom-Nom I-acc happy made
 'Tom made me happy' (causative)
 b Mary-ka Tom-ul cengcikha-key sangkakheyssta
 Mary-nom Tom-acc honest considered
 'Mary considered Tom honest' (small clause)
 c Mary-ka umsik-ul cha-key mekessta
 Mary-Mom food-acc cold ate
 'Mary ate her food cold' (depictive)
 d Tom-i changmwun-ul kkeykkesta-key takkassta
 Tom-nom window-acc clean wiped
 'Tom wiped the window clean' (resultative)

As in English, secondary predicates are always noninflectional in the sense that they do not contain inflection elements and are unmarked for tense The secondary predicates are derived by adding -key to the verb stems in Korean In this paper, I will focus on the last two types, depictive and resultative construction Let us look at the depictive construction first

- (22) a Mary-ka umsik-ul cha-key mekessta => a' Mary-ka umsik-ul mekessta
 Mary-Mom food-acc cold ate Mary-nom food-acc ate
 'Mary ate her food cold' 'Mary ate the food'
 a Mary-ka umsik-ul cha-key mekessta => b' umsik-i chassta
 Mary-Mom food-acc cold ate food-nom cold
 'Mary ate the food cold' 'the food was cold'

Depictive construction expresses that the state denoted by a depictive predicate is contemporaneous with the event denoted by a primary predicate. For example, the sentence 'Mary ate the food cold' means that the state of the food being cold is contemporaneous with Mary's eating the food. In this sense, the sentence is paraphrased this way: when Mary ate the food, it was cold (Simpson, 1983, Rothstein, 1985). Given the situation that the temporal situation between the matrix verb and the depictive predicate is identical, the entailment relations show that the -key marked item in (22) are predicates of the direct NPs. For example, (22a) entails both (22a') and (22b'). This means that the -key marked item *chakey* 'cold' is predicated of the direct NP *umsik* 'the food'.

Resultative predicate denotes a result state of the object NP caused by the action or process described by a matrix verb. For example, the sentence 'I hammered the metal flat' means that the metal became flat by the activity of hammering. In this sense, the resultative construction has been assumed to involve two events, namely the causing event by a matrix predicate and the resulting event by a resultative predicate. The relationship between the causing and resulting event is well shown in terms of entailment. Consider some examples in (23).

- (23) a ku-ka meli-lul ccalpkey callassta => a' ku-ka meli-lul callassta
 he-nom hair-acc short cut he-nom hair-acc cut
 'he cut his hair short' 'he cut his hair'
 a ku-ka meli-lul ccalpkey callassta => b' meli-ka ccalpta
 he-nom hair-acc short cut hair-nom short
 'he cut his hair short' 'hair is short'

In (23), the resultative construction (23a) involves two events, the causing event denoted by (23a') and the resulting event denoted by (23b'). So, the fact that (23a) entails both (23a') and (23b') means that the -key marked items *ccalpkey* 'short' is a secondary predicate. This is true in (24). That is, like depictive construction, the entailment relations show that the -key marked item is a secondary predicate of the direct object NP. (24a) entails both (24a') and (24b').

- (24) a ku-ka ccagmwun-ul kkekkesha-key talkassta => a' ku-nun ccagmwun-ul talkassta
 he-nom window-acc clean wiped he-top window wiped
 'he wiped the window clean' 'he wiped his window'
 a ku-ka ccagmwun-ul kkekkesha-key talkassta => b' ccagmwun-i kkekkeshata
 he-nom window-acc clean wiped window-nom clean
 'he wiped the window clean' 'the window is clean'

However, -key can derive an adverb in that key-marked items appear in sentences lacking a possible predication subject. Consider the example (25) in the next page.

- (25) mosnan namca-ka alumtap-key noleyha-yess-ta
 ugly man-NOM beautiful-ADV sing-PAST-DEC
 ‘The ugly man sang beautifully’

The sentence means that the ugly man sang very well, but does not mean that the ugly man was beautiful. Entailment shows that the ugly man is not the predication subject of the key marked item, *alumtapkey*, as illustrated in (26)

- (26) a mosnan namca-ka alumtap-key noleyhanta => a’ mosnan manca-ka noleyhanta
 old man-NOM beautifully sing ugly man sang
 ‘the ugly man sings beautifully’ ‘the old man sings’
 a mosnan manca-ka alumtap-key noleyhayessta |=> mosnan manca-ka alumtap-ta
 ugly man-Nom beautifully sang ugly man beautiful
 ‘the ugly man sings beautifully’ ‘the ugly man is beautiful’

In (26), (26a) entails (26a’) but not (26b’) This shows that *mosnan manca* ‘the ugly man’ is not the subject of the key-marked item *alumtapkey*. Instead, it is an adverb that just modifies the singing event

As mentioned above, entailments can clearly show whether –key marked items are predicates or adverbs in secondary predication construction (SPC). In this sense, I formulate the functions of –key as follows

- (27) The function of –key
 Given that the first sentence (A) involves Secondary Predication Construction (SPC) and the second sentence (B) involves PPC (Primary Predication Construction) whose subject is the direct object of A, –key derives a predicate if A entails B. Otherwise, –key derives an adverb

The main argument is as follows with respect to key-marked items, given that the first sentence involves SPC and the second involves PPC whose subject is the secondary subject of the first sentence, if the first sentence is true, the second sentence must necessarily be true. That is, only when the first entails the second, the –key marked item is a predicate. However, if the first is true and the second is false, that is, if the first does not entail the second, the –key marked item is an adverb

Based on this assumption, I will show that some of the examples as cited as predicates are in fact adverbs, to which I will turn now

5. ‘Fake’ predicates.

The so-called –key marked items have been analyzed as either adverbs or predicates. The issue arises from the fact that both predicates and adverbs are derived by adding the suffix –key. This raises the possibility that the resultatives using –key are really adverbs. In this paper, I argue that entailment can disambiguate the ambiguity caused by the morphological coincidence. Furthermore, this analysis can provide evidence that some of examples cited as a resultative predicate is in fact not a predicate but an adverb (Wechsler & Noh, to appear). Consider this example from Kim (1993,471) in the next page

- (28) a ku-ka michi-key yoichiessta
 he-nom crazy shouted
 'he shouted crazy'
 b kang-1 yalp-key elessta
 river-nom thin froze
 'A river froze thin'

According to Kim (1993), the sentences in (23) involve resultative construction. However, I assume that this is not true (Wechsler & Noh, to appear). In (28a), the sentence does not entail that he is (became) crazy, but just indicate that he shouted crazily. The same holds in (28b). The sentence does not entail that the river became thin, but rather that the ice did. It just shows that the freezing event occurred in a thin manner. The entailment relationship is shown in (29)-(30). (29a) entails (29a') but not (29b'), (30a) entails (30a'), but not (30b'). Note that *michikey*, 'crazily' *yalpkey* 'thinly' are analyzed as adverbs in (29) and (30), unlike Jang's (1997) examples.

- | | | | |
|--------|--|----|---|
| (29) a | ku-ka <u>michi-key</u> yoichiessta
he-nom crazily shouted
'he shouted crazily' | => | a' ku-ka yoichiessta
he-nom shouted
'he shouted' |
| | a ku-ka <u>michi-key</u> yoichiessta
he-nom crazily shouted
'he shouted crazily' | => | a' ku-ka michiessta
he-nom carzy-be
'he was crazy' |
| (30) a | kang-1 <u>yalp-key</u> elessta
river-nom thinly froze
'A river froze thinly' | => | a kang-1 elessta
river-nom froze
'A river froze' |
| | a kang-1 <u>yalp-key</u> elessta
river-nom thinly froze
'A river froze thinly' | => | b' kang-1 yalp-assta
river-nom thin-past-dec
'A river was thin' |

The similar patterns are shown in following sentences

- (31) a ku-nun cim-ul mwukep-key nallassta
 he-top baggage-acc heavily moved
 'he moved the baggage heavily,
 b ku-nun Swuni-lul yeppu-key kulissta
 he-nom Swuni-acc prettily drew
 'he drew Swuni pretty'

The sentences in (31) might be interpreted as depictive constructions because of the ambiguous usage of -key. However, they do not involve the depictive readings. Entailment shows that -key marked items are not predicates but adverbs. (31a) does not entail that the baggage was heavy. Likewise, (31b) does not entail that Swuni was pretty. The word *ywppukey* 'prettily' just indicates the manners of the activities of moving and drawing as adverbs. See (32)-(33) in the next page.

- (32) a ku-nun cim-ul mwukep-key nallassta => a' ku-nun cim-ul nallassta
 he-top baggage-acc heavily moved he-top baggage-acc moved
 'he moved the baggage heavily' 'he moved the baggage'
 a ku-nun cim-ul mwukep-key nallassta => b' cim-i nallassta
 he-top baggage-acc heavily moved baggage-1 moved
 'he moved the baggage heavily' the baggage was heavy'
- (33) a ku-nun Swuni-lul yeppukey kulissta => a' ku-nun Swuni-lul kulissta
 he-nom Swuni-acc prettily drew he-nom Swuni-acc drew
 'he drew Swuni pretty' 'he drew Swuni pretty'
- a ku-nun Swuni-lul yeppukey kulissta |=> b' Swuni-ka yepputa
 he-nom Swuni-acc prettily drew Swuni-nom pretty-dec
 'he drew Swuni pretty' Swuni was pretty'

5. Conclusion

In this paper, I have shown how the ambiguous characteristics of *-key* is interpreted in terms of entailment. The suffix *-key* derives both predicates and adverbs, although they are morphologically identical. However, if we closely examine the distributions of *-key*, it is found that their morphological identities are differentiated semantically. The notion of entailment might provide an answer of how the morphological coincidences are differentiated in terms of adverbs and predicates.

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