Constraints on the Formation of Korean and English Resultative Constructions[1]

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1 Introduction

English resultative phrases, which describe the state of an argument resulting from the action denoted by the verb, are well known to occur only in limited environments. As illustrated in examples (1), English transitive and unaccusative verbs can appear with resultative phrases, but unergative verbs cannot:

(1) a. John hammered the metal flat.
  b. The river froze solid.
  c. *He shouted hoarse.

The ungrammaticality of unergative resultatives like (1c) can be saved by the addition of a so-called fake reflexive or a similar NP, as shown in examples (2):

(2) a. He shouted himself hoarse.
  b. He cried his eyes out.
  c. He ran the pavement thin.

There have been two prevailing analyses to account for such distributional behavior of resultatives phrases: Affected Theme Restriction (ATR) and Direct Object Restriction (DOR). The ATR (Goldberg 1995 among others) claims that the resultative phrase can be predicated of only a theme argument. Meanwhile, the DOR (Simpson 1983, Levin and Rappaport 1995, among others), built upon the Unaccusative Hypothesis, allows only an (underlying or surface) object to serve as the subject of the resultative phrase. One strong argument against the theta-role based former approach comes from unergative cases as in (2): the postverbal NPs in (2) appear to receive no thematic role from the main verb at all. If the NP can receive a theta role, there is no reason why we cannot have sentences like **He ran the pavement*. As for the English data, the latter DOR analysis seems to be more plausible. Under this account, the ungrammaticality of (1c) follows easily: The NP *he* is not

[1]I have been benefited from numerous people in developing the analysis presented here. I especially thank Chungmin Lee, Peter Sells, Ryuichi Washio, and Steve Wechsler for their valuable comments and suggestions. But I am alone responsible for the views in this paper and any remaining errors. I also wish to acknowledge the financial support of the Korea Research Foundation in the program year of 1998.

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the object but the subject of the main predicate. This analysis predicts the grammaticality of examples in (2): the postverbal NPs here are all the objects regardless of their theta role status. Further support for such an analysis can be found in the impossibility of examples like (3).

(3) a. *The lake froze the fish dead.
  b. *The snow melted the road slushy. (Carrier and Randall 1992)
  c. *Fred cooked on the stove black (Jackendoff 1990)
  d. *John loaded the hay into the wagon full.

The fish in (3a) and *the road* in (3b) are neither the underlying nor the surface object. Also in (3c) and (3d), *on the stove* and *into the wagon* are oblique complements, not the objects.

This observation proves that the DOR analysis makes more sense for English resultative constructions. Yet, the question that follows is whether this DOR still can be applicable to other languages with different syntactic structures. Korean, which unlike English allows flexible word order, would be a good language to test such a syntactically based account. To this end, this paper first reviews the types of resultatives in Korean and shows that both the ATR and the DOR suffer from problems in predicting the distribution and formation of Korean resultative constructions. The paper then provides an alternative, constraint-based approach within the framework of Head-driven Phrase Structure Grammar (HPSG). The final section is devoted to an explanation for the differences between the two languages and suggest why such differences arise.

2 Korean Resultative Constructions

2.1 Resultative Types

In Korean, there are three main uses of resultative phrases. First, resultatives are predicated of direct objects of some transitive verbs[2].

(4) Ku-nun soy-lul pyongpyongha-key chyessta.
  He-TOP metal-ACC flat-COMP pounded
  'He pounded the metal flat.'

In the example, the resultative phrase is predicated of the direct object of the transitive verb. One interesting type that cannot be found in English is that Korean transitive constructions allow a resultative phrase to be predicated of the subject of the embedded clause describing the result event:

(5) a. Ku-nun Mary-lul [chim-i malu-key] chingchanhayessta.
  He-TOP Mary-ACC saliva-NOM dry.out-COMP praised
  '(lit.) He praised Mary (his) saliva dried out.'
  'He spoke in the highest terms of Mary.'

  b. Ku-nun nolay-lul [mok-i swi-key] pullessta.
  He-TOP song-ACC throat-NOM become.hoarse-COMP sang
  '(lit.) He sang songs (his) throat hoarse.'

[2]In glossing Korean data, I adopt the Yale Romanization system and the following abbreviations: TOP (Topic), ACC (Accusative), COMP (Complementizer), NOM (Nominative), GEN (Genitive), DECL (Declarative), LOC (Locative), QUES (Question), MOD (Prenominal Modifier Marker)

The sentences in (5) show that the resultative phrases *malu-key* and *swi-key* are predicated not of the direct object but of the nominative subject *chim-i* and *mok-i*.

Another main use of resultatives involves the resultative constructions based on passive and intransitive (unaccusative) verbs, as in English:

(6) Thakca-ka kkaykkusha-key ttak-i-ess-ta.
table-NOM clean-COMP wipe-PAS-PAST-DCL
'The table was wiped clean.'

As for unergative resultatives, Korean appears to behave just like English:

(7) *Ku-nun aphu-key kichimhayessta
He-TOP sick-COMP coughed
'*He coughed sick.'

*Ku-nun ces-key wulessta.
He-TOP soggy-COMP cried
'*He laughed tired.'

Unergative verbs describing the manner of action cannot have resultative attributes predicated of them. Like English, there is a way of saving this ungrammaticality:

(8) a. Ku-nun [(ku-uy) mok-i aphu-key] kichimhayessta.
He-TOP (he-GEN) throat-NOM sick-COMP coughed
'He coughed his throat sore.'

b. Ku-nun [(casin-uy) sonswuken-i ces-key] wulessta.
He-TOP (self-GEN) handkerchief-NOM soggy-COMP cried
'He cried the handkerchief soggy.'

The main difference from English we can observe, however, is that the NP that the resultative phrase in (8a) is predicated of is the nominative NP. This NP is directly related to the matrix subject: the optional specifier of the NP needs to be coreferential with the matrix subject.

2.2 Generalizations about Korean Resultative Constructions and Accompanying Issues

As observed in the previous section, one difference between Korean and English comes from the fact that Korean resultative phrases can be predicated of not the object of the main predicate, but the subject of an independent result-event clause in transitive and unergative verbs. This observation raises several empirical and theoretical issues.

When observing the flexibility in the possible types of resultatives in Korean, it is questionable whether all verb types can occur with resultatives in principle. Are unergatives really impossible in Korean? As observed in (7), unergatives appear not to be able to occur with resultatives directly. To save the construction, they need to introduce a result event clause (a clause with a resultative phrase and its subject) as shown in (8). There has been an attempt to account for the explanation of the ungrammaticality of (7). For instance, Kim and Maling (1986) attribute the unacceptability to there being no pragmatic link between the act of coughing and the resultant state of being sick. But their pragmatic account seems to suffer from problems, especially when considering unacceptable cases where we can establish a pragmatic link between the action of the main predicate and the resultant state. For example, it is not difficult to imagine the link between the act of crying and the state of being tired in (9):

(9) *John-i phikonha-key wulessta.
John-NOM tired-COMP cried
'*John cried tired.'

The impossibility of unergative resultatives appears to rely on the lexical semantics of the resultative phrase rather than on pragmatics; the phrase requires a delimited lower bound (cf. Goldberg 1995 for English). The phrase like *phikonha-key* 'tired' has no delimited lower bound. Accepting this constraint (cf. Kim 1993) and the assumption that all types of verbs can occur with a resultative phrase, we can predict that if the added resultative phrase observes this aspectual constraint, it alone can occur with an unergative verb. This prediction is borne out:

(10) John-i nemeci-key talliessta.
John-NOM fall.down-COMP ran
'*John ran falling down.'

The sentences mean that John ran and reached the resultant state of being falling down or fainting.

The next question is 'Is the DOR applicable to Korean also?' My answer is negative: as observed earlier, Korean allows cases where the resultative phrase is predicated of the subject of an independent clause. We have already seen that the resultative phrase can be predicated of the subject of an embedded clause as in (8).

Further, when the strategy of introducing an independent clause is adopted, even the unaccusative verb also allows the resultative phrase to be the predicator of the lower clause's subject:

(11) ?Hoswu-ka [kokitul-i cwuk-key] elessta.
lake-NOM fish-NOM dead-COMP froze
'*The lake froze the fish dead.'

This observation shows that the strict syntactic DOR restriction does not hold in Korean.

Then, what about the Affected Theme Restriction? The examples in (12a) and (12b) show that the resultative phrase can be predicated of not only a theme but even a locative argument:[3]

(12) a. John-i mal-ul cichi-key talliessta. (ambiguous)
John-NOM horse-ACC tired-COMP ran
'John ran (his) horse tired.'

b. Ku-nun [pal-ey mulcip-i sayngki-key] kelessta.
He-TOP foot-LOC blister-NOM come.out-COMP walked
'He walked his foot blistered.'

The resultative phrases in (12a) can be predicated either of the subject or of the theme object. (12b) displays another interesting case where the resultative phrase is predicated of the locative argument in the independent clause.

[3]Another remaining issue is concerned with the question of whether or not Korean resultative constructions are adjunct clauses. However, the comparison with true adverbial clauses reveals that resultative phrases are selected by the main predicate. See Kim 1998 for further discussion.

3 Formation of Resultative Constructions

3.1 Mismatch between Syntax and Semantics

As observed by Wechsler (1997), there is great resemblance between raising and unergative resultatives. Traditional examples of English raising and control verbs are given in (13) and (14).

(13) a. She seems to have lost her keys.
b. The joggers believed them to have lost her keys.

(14) a. John tried to be quiet.
b. John persuaded the kids to be quiet.

Raising verbs like *seems* and *believed* do not assign theta roles to one of their syntactic complements, unlike control verbs like *tried* and *persuaded*. This in turn means that control verbs can thus exert more influence over the subject or the object NP than raising verbs.[4]

The same contrast is observed in resultative constructions. The transitive resultative assigns a theta role to its object whereas the unergative resultative does not, as we have observed. Accommodating this distinction into resultatives, we could classify the types of resultatives into control and raising resultative constructions, as Wechsler (1996, 1997) has argued for:

(15) a. John hammered the metal flat.
b. The water froze solid.
c. John jumped out of the car.

(16) a. The joggers ran their Nikes threadbare.
b. The speaker was laughed off the stage.

The examples in (15) are control resultatives whereas those in (16) are raising ones. In control resultatives, a phrase like *the metal* that the resultative phrase *flat* is predicated of is a semantic argument of the matrix verb *hammer*. But the situation is different in raising resultatives. The NP *their Nikes* that the resultative phrase *threadbare* is predicated of is not a semantic argument of the matrix verb *ran*. In raising resultative constructions, the unergative verb does not assign a theta role to the postverbal NP. Thus, it does not exert direct influence over the object NP. This is the very property of common raising verbs like *seem* and *believe*.[5]

3.2 Constraints on English Resultative Constructions

A remaining issue is then how to form resultative constructions. The common assumption has been that resultatives generally inherit the argument structures of their non-resultatives.[6] Reflecting this viewpoint, I also assume that the following lexical rule (cf.

[4]See Pollard and Sag (1994) for more discussion of the properties of raising and control verbs.

[5]The distinction between raising and control resultatives is similar to Washio's (1997) classification between strong and weak resultatives. His 'strong' resultatives are similar to raising resultatives in that the meanings of the verb and the resultative phrase are completely independent of each other as in *John ran the pavement thin*. His 'weak' resultatives are control resultatives in our terms in that the semantics of the verb includes the kind of state the patient will come to be in as the result of the verb's action as in *John hammered the metal flat*. See Washio (1997) for further discussion.

[6]For example, Carrier and Randall (1992) provides three main arguments for the lexical rule treatment of resultative formation: resultatives are subject to lexical processes such as middle formation, adjectival passive, and nominalizations.

Wechsler 1996) is at work in the formation of resultatives, represented in the feature structure system of HPSG.[7]

(17) English Resultative Formation Lexical Rule:

$$\begin{bmatrix} \textit{nonresultative} & \\ \text{HEAD} & \textit{verb} \\ \text{COMPS} & \langle ... \rangle \end{bmatrix} \Longrightarrow \begin{bmatrix} \textit{resultative} & \\ \text{HEAD} & \textit{verb} \\ \text{COMPS} & \left\langle ..., \textbf{XP[SUBJ} \left\langle \textbf{NP} \right\rangle \textbf{]} \right\rangle \end{bmatrix}$$

The lexical rule takes as its input a nonresultative verb and yields as its output a resultative verb. It guarantees that the resultative output inherits the argument structure of its nonresultative input (indicated by the dots), as specified in COMPS (COMPLEMENTS). With this inheritance, the lexical rule also adds one additional complement (resultative) phrase whose subject is unexpressed.[8]

Let us, then, consider how transitive resultatives are formed within this system with the following examples.

(18) a. John painted the door.
b. John painted the door red.

According to the lexical rule in (17), the resultative verb *paint* in (18b) is taken to be derived from the pure, transitive verb *paint* in (18a), as represented in (19):

(19)

$$\begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \text{NP}_{\boxed{2}} \right\rangle \\ \text{CONT} & \boxed{5}\begin{bmatrix} \text{RELN} & \textit{paint} \\ \text{AGENT} & \boxed{1} \\ \text{PATIENT} & \boxed{2} \end{bmatrix} \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \text{NP}_{\boxed{2}}, \text{AP[SUBJ} \left\langle \text{NP}_{\boxed{2}} \right\rangle \text{]:}\boxed{3} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{paint} \\ \text{AGENT} & \boxed{1} \\ \text{THEME} & \boxed{2} \\ \text{RESULT} & \begin{bmatrix} \text{RELN} & \textit{red} \\ \text{THEME} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The lexical rule allows the input verb *painted* to add a resultative predicative phrase as an additional complement. In terms of semantics, the action of John's painting the door resulted in the door being in the state of being red.[9] But one may wonder how the unexpressed subject of the complement AP ($\text{NP}_{\boxed{2}}$) is coindexed with the object complement ($\text{NP}_{\boxed{2}}$).

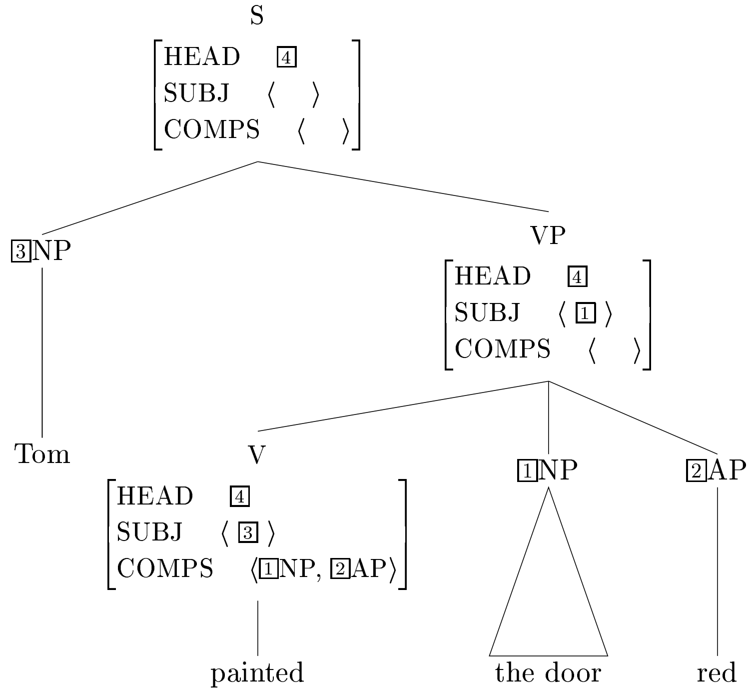
[7]The feature logic of this paper is mainly adopted from Pollard and Sag 1994. Some of the abbreviations we are using are COMPS (COMPLEMENTS), SUBJ (SUBJECT), CONT (CONTENT), RELN (RELATION), and so forth.

[8]One thing to note here is that though the constraint in the lexical rule (17) appears to be simple, this is not all; other independent constraints required from various grammatical levels will further restrict acceptable forms. For example, the output of the lexical rule also has the constraint that the added complement designates the result state of the event, meaning that the resultant phrase must be eventive, not stative, and needs to have a delimited lower bound as noted earlier. This general constraint prevents cases like the phrase *bored* in *Tom cleaned the table bored* from being interpreted as a resultative predicate.

[9]It is a standard assumption (cf. van Valin 1990 and Goldberg (1995) among others) that the resultative involves 'cause-become' relation, a relation between an action and a resultant state. When the result event is added, the meaning of the main verb gets a causative meaning, i.e. the agent caused the referent of the postverbal NP to be in the result state by the action of the verb.

This coindexing relation follows from the semantically based control theory of Pollard and Sag (1994), whose explanation for the grammar of English complement control is derived from the interaction of semantically based principles of controller assignment. According to their control theory, control verbs are classified into three types: *influence* type (object control verbs such as *persuade, appeal* and *cause*), *commitment* type (subject control verbs such as *promise, intend* and *try*) and *orientation* type (subject control verbs such as *want, hate* and *expect*). For each of these types, the analysis identifies a role which is designated as the controller, based on its semantics. A resultative verb like *paint* would be classified as an *influence* type in which the controller of the expressed subject of the infinitival VP complement is semantically defined to be the argument bearing the 'INFLUENCED' role. This explains the coindexing relation between the unexpressed subject of the resultative predicate AP and the object complement.[10] If we look at the syntactic structure that this output lexical entry in (19) generates, it will have the following ternary structure:

(20)



The structure in (20) conforms to all the universal constraints (principles) in HPSG: the HFP (Head Feature Principle), the VALP (Valence Principle), and the IDP (Immediate Dominance Principle):[11] The head (part-of-speech) information of the verb *painted* (tagged $\boxed{4}$) is identified with that of the VP it projects and then with that of S, in accordance with the HFP. The verb *painted* combines with its two complements, $\boxed{1}$NP and $\boxed{2}$AP. This verb also lexically selects an NP subject, and this specification is also part of the VP. Hence, the VP combines with the subject NP and eventually forms a fully saturated phrase. No

[10] The principles that determine the distribution of anaphors and pronominals (binding theory) also play roles in control theory. See Pollard and Sag 1994, Chap 7 for further discussion.

[11] The HFP principle roughly says that the head features of a mother phrase are identical with those of its head daughter. The Valence Principle plays the role of category cancellation associated with function application in Categorial Grammar. This principle guarantees that the VALENCE feature specifications of a lexical entry be discharged when it combines with subject, complement(s), or specifier. The IDP specifies universally available types of phrases, for example, licensing phrases consisting of a phrasal head daughter and a subject daughter, a lexical head and any number of complements, and a head with a specifier, a head with a modifier. See Pollard and Sag (1994) for further details.

constraints are violated in each local structure, guaranteeing the structure in (20) to be a well-formed linguistic object.[12] Now let us consider an unergative case:

(21) a. The dog barked.
b. The dog barked itself hoarse.

Our resultative formation lexical rule will derive the resultative intransitive verb *barked* in (21b) from its nonresultative verb *barked* in (21a):

(22)
$$\begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \quad \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{bark} \\ \text{AGENT} & \boxed{1} \end{bmatrix} \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP:}\boxed{1} \right\rangle \\ \text{COMPS} & \left\langle \boxed{2}\mathbf{NP}_{\boxed{4}}, \text{AP[SUBJ} \left\langle \text{NP}_{\boxed{2}} \right\rangle \text{]:}\boxed{3} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{bark} \\ \text{AGENT} & \boxed{1} \\ \text{RESULT} & \boxed{3}\begin{bmatrix} \text{RELN} & \textit{hoarse} \\ \text{THEME} & \boxed{4} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

As noted, the lexical rule adds the resultative phrase AP into the COMPS list. But notice here that we have another new complement $\boxed{2}\text{NP}_{\boxed{4}}$. The introduction of this new complement is independently motivated by the Raising Principle in English as given in Pollard and Sag (1994). As is well known, one clear property of raising verbs is the sharing of entire syntactic information between the unexpressed VP complement's subject and the raising controller (the subject in subject-to-subject cases and the object in subject-to-object cases). As one way of capturing the generalization that unassigned arguments must be raising controllers, they posit the Raising Principle given in (23):

(23) Raising Principle:
If a verb's VALENCE feature contains XP[SUBJ <$\boxed{1}$NP>] and lacks a local controller, then add the phrase $\boxed{1}$NP to COMPS value (cf. Pollard and Sag 1994:143).

Now, going back to (22), we can observe the resultative phrase AP has an unexpressed subject (AP[SUBJ <$\boxed{1}$NP>]), thus requiring a local controller. This requirement triggers the addition of one complement NP (which is the unexpressed subject of the resultative AP) in accordance with the principle in (23). This is why we do not allow cases like **The dog barked hoarse.*

Now let us consider an unaccusative case.

(24) a. The water froze.
b. The water froze solid.

The resultative formation lexical rule in (18) will generate the resultative *froze* from its nonresultative counterpart *froze*:

[12]HPSG is a constraint-based theory of grammatical competence. All of its representations – lexical entries, phrases, sentences and even universal principles – are partial descriptions of constructs used to model types of linguistic utterances. Thus the grammar requires that every linguistic object strictly observe every relevant constraint.

(25)
$$\begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \quad \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{freeze} \\ \text{THEME} & \boxed{1} \end{bmatrix} \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \text{AP[SUBJ} \left\langle \text{NP}_{\boxed{2}} \right\rangle\text{]}{:}\boxed{3} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{freeze} \\ \text{THEME} & \boxed{1} \\ \text{RESULT} & \begin{bmatrix} \text{RELN} & \textit{solid} \\ \text{THEME} & \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

One may ask why the Raising Principle cannot be applied here. The reason is simple: the verb *froze* isn't a raising verb, but a control verb; the predication subject *the water* is a semantic argument of the verb *freeze*.

In sum, we have observed that the simple lexical rule is enough to account for the formation of English resultative constructions when equipped with independently motivated constraints on raising and control verbs.

3.3 Constraints on Korean Resultative Constructions

We have observed that Korean resultative constructions can be classified into two groups: cases with an independent result event clause being added and those with a predicative phrase denoting a result state. In generating these resultatives in Korean, I assume that the lexical rule in (26) is at work for the formation of Korean resultative constructions[13]

(26) Korean Resultative Formation Lexical Rule:
$$\begin{bmatrix} \text{HEAD } \textit{verb} \\ \text{COMPS} \left\langle ... \right\rangle \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD } \textit{verb} \\ \text{COMPS} \left\langle ..., \text{XP} \right\rangle \end{bmatrix}$$

This lexical rule takes as its input a nonresultative verb and yields an alternative resultative verb with one additional predicative complement which is a type of resultant event. Notice here that there is one difference from the English resultative lexical rule: the resultative phrase has no specification on its subject value, implying that its subject value can be either saturated or unsaturated. Thus when it is saturated, we will have an independent clause, whereas when it is not, we will have just one resultant phrase. This freedom allows Korean, unlike English, to have a full sentence depicting a result event as in (24).[14]

Let us examine how this system works out in detail for each resultative type, beginning with transitive cases:

(27) a. Ku-nun thakca-lul ttakassta
he-TOP table-ACC wiped
'He wiped the table.'

b. Ku-nun thakca-lul [kkaykkusha-key] ttakassta
he-TOP table-ACC clean-COMP wiped
'He wiped the table clean.'

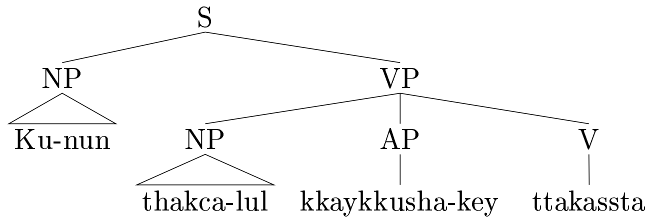
[13]As in English, the added resultant phrase has an aspetcual constraint; the resultative XP should denote a resultant event or state.

[14]Sells (1998) also presents a similar analysis in which a resultative phrase or a sentence is "freely composed" into an input verb. See Sells (1998) for details.

The nonresultative verb *ttakassta* 'wiped' in (27a) would be the input to its resultative counterpart, as represented in (28):

(28)
$$\begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \text{NP}_{\boxed{2}} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{wipe} \\ \text{AGENT} & \boxed{1} \\ \text{PATIENT} & \boxed{2} \end{bmatrix} \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \text{NP}_{\boxed{2}}, \text{AP[SUBJ} \left\langle \text{NP}_{\boxed{2}} \right\rangle\text{]}:\boxed{3} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{wipe} \\ \text{AGENT} & \boxed{1} \\ \text{RESULT} & \begin{bmatrix} \text{RELN} & \textit{clean} \\ \text{THEME} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

This lexical output will generate the following structure for the resultative sentence (27)b:

(29)


The resultative AP in (28) has an unexpressed subject; it, therefore, needs to look for a local controller, dependent upon the lexical semantics of the main predicate. The meaning of *paint* restricts the controller of *nolah-key* 'yellow-COMP' to be its object (given the semantic-based control theory as set forth by Pollard and Sag 1994). But notice that verbs like *talliessta* 'ran' or *capassta* 'catch', whose lexical meaning has no such semantic restriction, allow either the subject or the object to be the controller of the resultative phrase, as shown the possible interpretations of the sentences in (30):

(30) a. John-i mal-ul cichi-key talliessta. (ambiguous)
John-NOM horse tired-COMP ran
'John ran (his) horse tired.'
'John ran his horse, and he became tired.

b. John-i Mary-uy son-ul aphu-key capassta. (ambiguous)
John-NOM Mary-GEN hand-ACC painful-COMP hold
'John hold Mary's hands painful.'
'John hold Mary's hands and his hands became painful.'

Now let us consider an unergative case.

(31) a. Ku-nun wulessta.
He-TOP cried
'He cried.'

b. Ku-nun [mok-i aphu-key] wulessta.
He-TOP throat-NOM hoarse-COMP cried
'He cried his throat hoarse.'

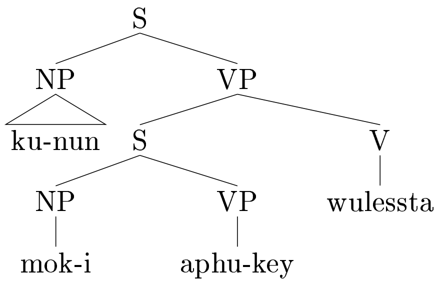
According to the Korean resultative formation lexical rule, the nonresultative input will generate a resultative unergative output:

(32)

$$\begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \quad \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{cry} \\ \text{AGENT} & \boxed{1} \end{bmatrix} \end{bmatrix} \Longrightarrow \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \left\langle \text{NP}_{\boxed{1}} \right\rangle \\ \text{COMPS} & \left\langle \text{S[VFORM } \textit{-key}]_{\boxed{2}} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{RELN} & \textit{cry} \\ \text{AGENT} & \boxed{1} \\ \text{RESULT} & \begin{bmatrix} \text{RELN} & \textit{throat} \\ \text{THEME} & \boxed{4} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Again, the yielded resultative unergative verb generates the following structure:

(33)



One key point of the proposed analysis is that a resultative predicative phrase can be freely added either as a saturated or as an unsaturated phrase, only if the resultative phrase observes the aspectual restriction.

This also explains why we can have a sentence like the following:

(34) John-i kkamulachi-key solichi-ess-ta
John-NOM faint-COMP shouted
'*John shouted fainted.'

In sum, we have observed that a simple lexical rule can account for the formation of Korean resultative constructions without relying on the notion of unaccusative and unergative distinction. Notice here that raising properties do not play any role in Korean. In what follows, we will discuss this issue further.

4 Similarities and Differences between English and Korean Resultative Constructions

With respect to the fact that resultative constructions represent a certain change of state due to the action denoted by the matrix verb, the two languages show no difference. The observed differences are as follows:

- English unergative resultatives have syntactically ternary structures, whereas their Korean counterparts have binary structures; the predicative NP of the resultative phrase is realized as the object in English and as the subject of the embedded clause in Korean.
- Resultative phrases in Korean can be predicated of either an agent or a theme argument (even a locative element). In other words, they can be predicated of even a subject or a complement other than the direct object.

- In the formation of resultative constructions, both English and Korean employ one simple lexical rule introducing a resultative phrase. The difference is that in Korean it is not specified whether the resultative XP is a saturated phrase or an unsaturated phrase.

To answer where these differences come from, let us consider several relevant questions first. The first related question is: Why must the subject of the resultative phrase be expressed in English at all? The answer is that English has the property that a predicative complement of any category except a nonfinite VP must locally express its overt subject (cf. Wechsler 1997)

(35) a. To err is human.
b. The counselor recommended living together before getting married.

(36) a. *John considers [PRO fond of herself].
b. *The director kept [PRO on the stage].

However, no such restriction holds in Korean.

(37) a. Yonchwulca-ka ku kes-ul mwutaywi-ey twuesse
director-NOM that thing-ACC on.stage-LOC put
'The director put it on the stage.'

b. Yonchulcaka *pro* mwutaywi-ey twuesse.

As can be observed in (37b), the subject of the second predicate need not be expressed, given a proper context. That is why the subject of a resultative phrase, especially in unergatives, need not be realized.

The second question is: why in English is the subject of the resultative phrase in unergatives realized as the object of the main predicate, whereas in Korean why it is the subject of the embedded clause? The difference may come from the fact that in English, raising (or Exceptional Case Marking construction) is the basic complementation pattern, whereas it is not in Korean.

There seems to exist no 'true' ECM construction in Korean equivalent to the English one (cf. Hong 1990). Several clear differences between the two languages support this claim: unlike in English, the VP complement in Korean is finite, headed by the suffix *-ko*.

(38) John-un Lee-ka/lul papo-i-ess-ta-ko mitnunta.
John-TOP Lee-NOM/ACC fool-COP-PST-DECL-COMP believe
'John believes that Lee was a fool.'

The finiteness of the VP, unlike in English, makes it optional for the VP's subject to have either a nominative or an accusative.

Further, the controllee of the unexpressed subject of the VP does not have to be the embedded subject, as noted by Hong (1990). The controllee in (39) is the locative phrase.

(39) John-i LA-lul [hankwuksalam-i ceyil manhi santa-ko] sayngkakhanta.
John-NOM LA-ACC Korean-NOM most many live-COMP think
'John thinks that LA has the largest Korean population.'

The behavior of a wh-phrase in the Korean ECM construction also shows the difference from the English one (cf. Lee and Wechsler 1995).

(40) a. John-un nwuku-lul hyonmonghata-ko mit-ni?
John-TOP who-ACC clever-COMP believe-Ques
'Who does John believe to be clever?'

b. *John-un nwuku-lul hyonmongha-nya-ko mit-ess-ta
John-TOP who-ACC clever-QUES-COMP believe-Ques
'Who does John believe to be clever?'

One general condition in Korean is that a wh-phrase needs to appear in a clause with a question morpheme on the predicate. The contrast between (40a) and (40b) shows that the accusative wh-phrase is licensed by the higher predicate with no specific case motivation.

Another case showing that the accusative NP is base-generated comes from the contrast in (41a) and (41b), as noted by Song (1994).

(41) a. Wuli-ka John-i santa-ko sayngkakha-n cip-ey pwul-i nass-ta
We-NOM John-NOM live-COMP think-MOD house-LOC fire-NOM set-DECL
'The house where we believed that John was living was set on fire.'

b. *Wuli-ka John-ul santa-ko sayngkakha-n cip-ey pwul-i nass-ta
We-NOM John-NOM live-COMP think-MOD house-LOC fire-NOM set-DECL
'The house where we believed John to be living was set on fire.'

The data we have observed so far indicate clear differences between the English ECM and the Korean ECM construction, implying that the ECM is a basic complementation pattern in English whereas it is not in Korean. If this observation is correct, the difference in resultative constructions also follows: in Korean, nothing requires the subject of a resultative phrase to be realized as the object since the accusative object is from the beginning selected by the higher predicate. In English, however, it needs to be realized as the object because of a case motivation.

5 Conclusion

Syntactic proponents have accepted the view that the unaccusative hypothesis and the direct object restriction are principled reasons for the distribution of resultative constructions. However, a careful examination of Korean which allows various types of resultatives and further the resultative phrase predicated of a theme, an experiencer, or a locative argument, has revealed that the view is problematic, requiring a different perspective to capture the language differences.

In accounting for the distribution of resultatives in English and Korean, we have not resorted to notions such as unaccusativity or unergativity, or surface or deep structure. Instead, we adopt, following Wechsler (1996, 1997), the distinction between raising and equi verbs. This independently motivated-distinction, equipped with a simple lexical rule and other language independent constraints, is straightforward enough to account for English as well as Korean resultative constructions.

The analysis presented here has thus been able to predict the tight syntactic constraints in English resultatives and the relative flexibility of Korean resultative constructions. Further the difference between the resultative constructions in the two languages has been simply a matter of feature specifications on the lexical rule. This system has enabled us to provide a systematic account for the syntactic and semantic mismatch in the unergative construction, without resorting to a syntactic or lexical distinction between unergative and unaccusative verbs.

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