

Texas Linguistic Forum 38

The Syntax and Semantics of Predication

Proceedings of the 1997 Texas Linguistics Society Conference

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A Crosslinguistic Perspective on Resultative Formation*

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1. Introduction

In this paper we propose that the resultative construction in English involves a restructuring of the argument structure of the main verb, a process which we call Resultative Formation. We argue that Resultative Formation is a lexical rule that radically restructures the theta-grid of the matrix verb, turning it into a monotransitive verb that subcategorizes for a single object position. The effect of this restructuring is visible for intransitive unergatives and for ditransitive verbs, but may be vacuous for monotransitive verbs and unaccusative verbs, since these already subcategorize for a single object position. We begin by noting certain important descriptive generalizations governing the resultative construction when the matrix verb is a ditransitive or triadic verb. These generalizations cannot be given a principled explanation if the matrix verb projects the same argument structure in the resultative construction as it does in isolation. The present account thus stands in sharp contrast to other accounts of resultatives which deny argument-structure changing. The syntactic restrictions exhibited in English do not hold for the resultative construction in Korean, Tamil, Warlpiri or Finnish. We show that this parametric difference can receive a principled explanation if the resultative construction in these languages does not involve a lexical operation like Resultative Formation.

The typology of resultative constructions appears to have at least the four subclasses shown in (1):

- (1) A typology of resultative constructions:
 - a. languages with virtually no (syntactic) resultatives (e.g., Irish, Japanese)
 - b. languages with productive resultatives having no fixed syntax (e.g., Korean, Tamil)
 - c. languages with productive resultatives having a fixed syntax (e.g., English, Norwegian)
 - d. languages with a constrained but not fixed syntax for resultatives (e.g., Finnish, German)

* This research was supported in part by NSF Grant #SBR-9223725 to Brandeis University. Thanks to Arto Antilla, Lauri Karttunen, Anne Vainikka, Maria Vilkuina for judgments and discussion of the Finnish data. Also thanks to Nancy Ackles, Fritz Newmeyer, and Moira Yip for comments on the English data. Special thanks go to Brady Clark for collecting the Tamil data from Siva Narayanan. The first author is primarily responsible for the analysis.

We suggest that the Case resources of a given language impose constraints on the possible resultatives, producing the mixed patterns. However, locality conditions on Case assignment and predication relations cannot account for the rigid syntax of the construction in English. We show that the Resultative construction in English is not compatible with verbs that require more than one internal argument. A principled explanation for this generalization can only be provided if Resultative Formation in English involves a radical restructuring of the theta-grid of the matrix verb that turns it into a monotransitive verb that subcategorizes a single object position, possibly in the form of a complex predicate. In effect, the fixed argument structure of the English Resultative construction prevents any extra internal argument from co-occurring with the resultative, as well as requiring a "fake object" for unergative verbs.

2. Resultatives in English and Unaccusativity

The English resultative construction has received extensive discussion in the literature. Not only does it have a fixed syntax, but it also has a cluster of curious restrictions. The examples in (2) illustrate various subtypes of the resultative construction where the subject of the result phrase is a "fake object" not subcategorized for by the unergative intransitive main verb (cf. Jackendoff, 1995:Ch. 10.4; Levin & Rappaport-Hovav, 1995, Ch. 2):

- | | | |
|-----|---|-------------------------------|
| (2) | a. Chris shouted herself hoarse. | <i>fake reflexive object</i> |
| | b. We drank the teapot dry. | <i>independent NP</i> |
| | c. They worked their fingers to the bone. | <i>inalienable possession</i> |

The subject of the result phrases in (2a-c) is not a subcategorized argument of the main verb, since the sentences are all ungrammatical without the result phrase. Given the standard view that unergative verbs are not Case-assigners, the obvious question is how the nonsubcategorized NP gets Case.

As discussed by L & R (1995:39f), from whom example (3c) is taken, resultatives of the type illustrated in (3) do not occur with either unaccusative verbs or with weather verbs:

- | | |
|-----|--|
| (3) | a. The lake froze solid. |
| | b. *The lake froze the fish dead. |
| | c. *During the spring thaw, the boulders rolled the hillside bare.
(L&R 1995:39f) |
| | d. *The snow melted the road slushy. (Carrier & Randall, ms.) |
| | e. *It rained the road muddy. (Carrier & Randall, ms.) |

This contrast has led many researchers to believe that unergatives are indeed accusative Case-assigners, and that the resultative construction offers an important diagnostic for unaccusativity. The generalization appears to be that the subject of the result phrase must be immediately postverbal, i.e. occur in "direct object" position (C&R, 1992; Hoekstra, 1988; Jackendoff, 1990; L&R, 1995; Rothstein, 1983; Stowell, 1981). Following L&R (1995), we will refer to this as the Direct Object Restriction (DOR). The contrast between (3a) and (3b), or between (3b) and the examples in (2) is then expected under the Unaccusative Hypothesis. The surface subject of an unaccusative verb is underlyingly the verb's complement, and has undergone Case-searching NP-movement to [Spec,IP]; the trace in immediately postverbal position prevents an independent NP from being the subject of the result phrase.

The DOR also explains why a transitive verb that obligatorily subcategorizes for a thematic object does not allow the resultative construction if the subject of the result phrase is an independent rather than a thematic object of the matrix verb.

- | | |
|-----|--|
| (4) | a. *Sandy hypnotized. |
| | b. *Sandy hypnotized the volunteers the auditorium quiet. |
| | c. *Sandy hypnotized the auditorium quiet. (cf. C&R, 1992:187) |

Example (4c) is ungrammatical since the auditorium is not a possible thematic object of *hypnotize* (unless it can be interpreted as a collective noun).

In many cases, the subject of the result phrase is thematically related to the matrix verb as an oblique object, as illustrated by the following examples in (5) from Jackendoff (1990):

- | | |
|-----|--|
| (5) | a. Fred cooked (*on) the stove black. (Jackendoff, 1990:227) |
| | b. The professor talked (*to) us into a stupor. |
| | c. Bill shaved (*with) his razor dull. |

In these examples, the postverbal NP can be the direct object only if the result phrase is present; otherwise, it must be realized as object of a preposition. In such cases, the DOR cannot be reduced to the adjacency condition on Case assignment, since prepositions do assign Case. Hence the DOR must be given a strict interpretation: the subject of the result phrase must be immediately postverbal and linearly adjacent to the main verb. L&R suggest that the DOR be interpreted along the following lines, stated in (6):

- | | |
|-----|---|
| (6) | The Change-of-State Linking Rule (L&R, 1995:51) |
| | An NP that refers to the entity that undergoes the change of state in the eventuality described in the VP either must be governed by the verb heading the VP or must be the direct object of the verb heading the VP. |

One immediate consequence of this Linking Rule is that the result phrase cannot be predicated of the subject of a transitive or unergative verb, since the verb fails to govern subject position. Nor can the result phrase be predicated of the object of a preposition, since the PP forms a barrier to government of the subject of the result phrase by the matrix verb. As is well-known, these predictions hold for English:

- | | |
|-----|---|
| (7) | a. *I ate the food full/sick. (Simpson, 1983:144) |
| | b. *John loaded the hay into the wagon full. (Williams, 1980:204) |

The AP in (7a) cannot be interpreted as a result phrase; (7b) is also ungrammatical since the verb cannot govern the subject of the result phrase because of the intervening preposition.

To summarize, the English resultative construction has a rigid syntactic template in which the subject of the result phrase must occupy the immediately postverbal (direct object) position (Jackendoff, 1990:226; L&R, 1995:37f). Its Case and predication restrictions might be seen as natural consequences of the DOR, given that locality is a typical condition on Case assignment and predication. But as we will show in Section 5, the rigid syntax of the resultative construction cannot be reduced solely to locality conditions.

3. Resultatives in Korean

Let us now turn to the resultative construction in Korean. A very different picture emerges: none of the syntactic restrictions observed in English resultatives appear to hold of the Korean counterpart. The most obvious difference is that in Korean the subject of the result phrase may occur in the nominative case, as illustrated in (8):

- (8) a. Robin-i paykkop-i ppacki-key wus-ess-ta. Korean
 Robin-NOM belly-NOM come.out laugh-Pst-Ind
 'Robin laughed his belly out.'

intransitive verb

- b. Chris-ka palpatak-i talh-key talli-ess-ta.
 Chris-NOM feet-NOM worn run-Pst-Ind
 'Chris ran her feet sore/her shoes threadbare.'

This does not mean, however, that the subject of the result phrase always bears nominative case. The generalization is that the subject of the result phrase is marked accusative when it is a thematic object of the matrix verb, but must be nominative when it is a nonthematic NP. By 'nonthematic' we mean not thematically related to the matrix verb. Compare (8) with (9):

- (9) *transitive verb*
 a. Robin-i soy-lul ttukep-key talkwu-ess-ta.
 Robin-NOM metal-ACC hot heat-Pst-Ind
 'Robin heated the metal hot.'

transitive verb

- b. Sandy-ka kwaca-lul pasakha-key kwu-ess-ta.
 Sandy-NOM cookies-ACC crisp bake-Pst-Ind
 'Sandy baked the cookies crisp.'

In (9a,b) the subject of the result phrase is also the thematic object of the matrix verb; hence it receives (and must receive) accusative case from the verb. This suggests that when the subject of the result phrase is not associated with the theta-grid of the matrix verb, as in (8), the resultative construction forms an independent case domain, and as such, it must have its own source of Case.

A remark on the suffix *-key* is in order. We assume that the suffix *-key* on the result phrase is an inflectional element which can assign nominative to its subject. It is not our intention to claim that *-key* in resultatives must be a category pertaining to tense and inflection, only that *-key* heads the resultative construction. This suffix has many different functions in Korean, including at least the following two uses: it can be an inflectional element marking an infinitive-like clause, or it can be an adverbial element marking an adverbial modifier. In (9), the phrase marked with *-key* is clearly predicative, not adverbial. Example (9a) can be contrasted with (10), where the *-key* phrase is used as a manner adverbial modifying the matrix verb.

- (10) Robin-i Sandy-lul ttukep-key an-ass-ta.
 Robin-NOM Sandy-ACC hot hug-Pst-Ind
 'Robin hugged Sandy passionately (i.e., in a hot manner)'

The sentence in (10) does not have the resultative meaning that Sandy became hot as a result of Robin's hugging; nor does it have the depictive reading where Robin was hot when hugging Sandy.

There is further evidence that the resultative construction in Korean is more like a free adjunct clause forming an independent case domain of its own. Consider the contrasts in (11) with respect to the part-whole relationship:

- (11) *Resultative*
 a. Sandy-ka koki-lul ppye-ka/*lul humuleci-key salm-ass-ta.
 Sandy-NOM meat-ACC bone-N/*A gelatinous boil-Pst-Ind
 'Sandy boiled the meat [until] the bone [became] gelatinous.'

Part-Whole

- b. Sandy-ka na-lul elkwul-ul/*i ttayli-ess-ta.
 Sandy-NOM I-ACC face-ACC/*NOM beat-Pst-Ind
 'Sandy beat me on the face.'

The part-whole construction typically involves case-agreement, as illustrated in (11b). (For detailed discussion of case-marking in part-whole constructions in Korean, see Maling & Kim, 1992.) The resultative construction, however, does not allow accusative case on the nonthematic subject, as shown in (11a), even when a part-whole relationship holds between it and the thematic object of the matrix verb.

The fact that the resultative construction in Korean forms its own case domain distinct from the case domain of the matrix verb predicts a number of differences between English and Korean resultatives. The most salient are the following:

- (12) a. All verb types can in principle occur with resultatives in Korean.
 b. A result phrase can be predicated of any argument NP, internal or external.

The examples below illustrate property (12a) for ditransitives, unaccusatives and weather verbs; examples of transitive and unergative verbs have already been given in (8) and (9).

- (13) *Ditransitive Verb*
 a. Robin-i tali-ka hwui-key umsik-ul sang-ey ollyenoh-ass-ta.
 Robin-N legs-N bent -food-A table-DAT pile/put-Pst-Ind
 'Robin piled food on the table [so that its] legs [became] bent.'

Unaccusative Verb

- b. Kil-i cilphenha-key nwun-i nok-ass-ta.
 road-NOM slushy snow-NOM melt-Pst-Ind
 'The snow melted [so that] the road [became] slushy.'

Weather Verb

- c. Cipung-i muneci-key pi-ka phepu-ess-ta.
 roof-NOM down rain-NOM pour-Pst-Ind
 'It poured [so that] the roof [fell] down.'

The fact that the subject of the result phrase does not depend on the matrix verb for Case has the effect of freeing the construction from any structural restrictions like the DOR. As a result, resultatives in Korean do not appear to provide a diagnostic for unaccusativity.

It has been claimed that the Korean resultative construction does not allow a fake reflexive (Jong-Bok Kim, 1993). This generalization is an overstatement. Although *caki* is not allowed in the resultative construction, as Jong-Bok Kim correctly pointed out, a genuine local reflexive, *susulo*, can occur:

- (14) *"fake reflexive"*
 Robin-un susulo-ka/*caki-ka kkamulachi-key solichi-ess-ta.
 Robin-TOP him/herself-NOM fainted shout-Pst-Ind

As has been repeatedly observed in the literature, Korean *caki* is not a genuine reflexive, but behaves like a pronoun. It is not clear why this contrast holds, but whatever the reason, it is clearly incorrect to say that Korean has no counterpart of 'He shouted himself hoarse,' where the subject of the result phrase is a fake reflexive. Furthermore, the subject of the resultative can be a null argument pro, as expected since Korean freely allows pro arguments. This is illustrated by the example in (15):

- (15) Chris-ka kkamulachi-key solichi-ess-ta.
Chris-NOM fainted shout-Pst-Ind
'Chris shouted himself/herself/someone fainted.'

As indicated by the translation, the sentence in (15) is ambiguous in that the result phrase can refer either to the matrix subject (Chris), or to someone else.

Property (12b) is illustrated in (16):

- (16) a. John-i chim-i malu-key Mary-lul chingchanhay-ss-ta.
John-N tongue-N dry Mary-ACC praise-Pst-Ind
'John praised Mary his/*her tongue dry.'
b. Meli-ka ccwuppyese-key koymul-i na-eykey takaw-ass-ta.
hair-NOM on.end monster-N I-DAT approach-Pst-Ind
'A monster approached me [so that] my hair [became] on end.'

In (16a) the result phrase is predicated of the external argument; in both (16b) and (13a), it is predicated of the oblique internal argument, marked with dative case. Thus resultatives in Korean appear not to be subject to any of the configurational restrictions that English resultatives are.

This is not to say that the resultative construction is possible for any unaccusative verb in Korean. As discussed by Levin & Rappaport (1995) for English, verbs of inherently directed motion do not occur in the resultative construction; hence a secondary predicate that occurs with such verbs can only be interpreted as a depictive. Thus, *Kim arrived breathless* cannot mean that Kim became breathless as a result of arriving. Similarly, a phrase that serves to delimit the eventuality of the whole sentence cannot co-occur with a resultative as illustrated in (17a); the same is true for Korean. The verb *tochakha* 'arrive' belongs to the class of unaccusatives that denote inherently directed motion, :

- (17) a. We ran the soles off our shoes (*into town). (cf. L&R, p.59)
(meaning we wore our soles down as a result of running into town)
b. Kim-i swum-i mec-e/*mec-key tochakhay-ss-ta.
Kim-N breath-N stopped-DEP/*RES arrive-Pst-Ind
'Kim arrived breathless.'

Note that in Korean, the resultative-depictive distinction is lexically encoded by means of verbal morphology, as illustrated in (17b). This kind of restriction is not difficult to understand. As many researchers have suggested, a result phrase specifies a change of state, serving to delimit the eventuality of a sentence, and therefore is not compatible with a sentence whose verb is inherently delimited or takes a distinct delimiter.

There appear to be further restrictions on when unaccusative verbs can occur in the resultative construction. Consider the contrast in (18):

- (18) a. *Hoswu-ka koki-ka cwuk-key el-ess-ta.
lake-NOM fish-NOM dead freeze-Pst-Ind
'The lake froze [so that] the fish [became] dead.'

- b. Hoswu-ka koki-ka tungtungtu-key ssek-ess-ta.
lake-NOM fish-NOM floating.up stagnate-Pst-Ind
'The lake stagnated [so that] the fish [became] belly up.'

Given that the matrix verbs in (18) both belong to the class of achievement verbs, and that they are (presumably) both unaccusative verbs, it is not immediately clear why such a contrast holds. But it seems clear that the ill-formedness of (18a) has little to do with unaccusativity per se, since (19a,b) with the same matrix verb as in (18a) are both fine:

- (19) a. Kang-i tantanha-key el-ess-ta. (Jong-Bok Kim, 1993:471)
river-NOM solid freeze-Pst-Ind
'The river froze solid.'
b. Hoswu-ka phyomyen-i tantanha-key el-ess-ta.
lake-NOM surface-NOM solid freeze-Pst-Ind
'The lake froze its surface solid.' (lit.)
c. Phyomyen-i tantanha-key hoswu-ka el-ess-ta.

As illustrated by (18b) and (19b), a result phrase can have an overt subject NP in Korean, even when used with an unaccusative verb. (The word order in (19c) shows that (19b) is a resultative and not a multiple subject construction.) Note that there is no English counterpart to (19b), although the English counterpart of (19a) is fine. This follows from the case-assigning properties of unaccusative verbs: the subject of the result phrase would have no source for Case in English, where it would have to get Case from the matrix verb, unlike Korean, where it can get Case from the resultative suffix directly. It remains unclear what rules out (18a), and we can only speculate that some semantic restriction might be at play. Support for this suggestion comes from the fact that the same contrast holds for Tamil resultatives:

- (20) a. ??Kulam miinkal saha uraintatu¹ Tamil
pond-NOM fish-PL-NOM die-INF freeze-PST-neut.sg
'The pond froze the fish dead.'
b. Kulam miinkal kulira uraintatu
pond-NOM fish-PL-NOM become.cold-INF freeze-PST-neut.sg
'The pond froze the fish cold.'

One might suggest at this point that the Korean construction under discussion is not really a resultative construction, but rather an adjunct subordinate clause of the 'so that' type. Some clarification is thus in order before closing this section. That we are dealing with resultatives and not with mere adjunct clauses with a cause-event reading can be shown by considering some distinct syntactic properties of resultatives. Resultatives are well-known instances of a syntax-semantics mismatch. Syntactically, the base verb is the main verb, but conceptually, the result phrase is the main predicate (Jackendoff, 1990:228f). Hence it is the matrix verb rather than the result phrase that bears inflection. But in Korean, the reverse holds true for a clause of the 'so that' type, where the result phrase acts as the main predicate in bearing inflection:

- (21) Adverbial -ese 'so that' clause
a. Hoswu-ka el-ese koki-ka cwuk-ess-ta. Korean
lake-NOM freeze-CAUS fish-NOM die-Pst-Ind
'The lake froze, so the fish died.'

¹ While the example very vaguely has the resultative reading, it also has a reading like "the pond froze with the intention of killing the fish." We have no explanation to offer for this intuition (due to Siva Narayanan)."

- b. Hoswu-ka ssek-ese koki-ka tungtungtu-ess-ta.
lake-NOM stagnate-CAUS fish-NOM float.up-Pst-Ind
'The lake stagnated, so the fish went belly up.'

In Chinese, as pointed out by Audrey Li (1990:45), only the result phrase can be negated, but not the main verb, since the result phrase is the "main predicate" in exactly the sense of Jackendoff. This is presumably true for resultatives in all languages: if the eventuality of the main verb is negated, then it cannot bring about the subsequent result that the resultative construction is all about.

- (22) Robin didn't run his/her Nikes threadbare.

The sentence in (22) cannot mean that Robin didn't run. The same holds true for resultatives in Korean. But this spect of negation clearly does not hold for the -ese 'so that' clause illustrated in (21a,b). Yet another difference between the two constructions is that the resultative is subject to whatever (semantic) restriction accounts for the ungrammaticality of (18a), whereas the -ese clause is not, as illustrated by the contrast between (18a) and (21a).

4. Other Languages Not Exhibiting the DOR

The cross-linguistic properties of resultative constructions put the English data in perspective. Let us first consider the DOR. The fact that a resultative can be predicated of an external argument of the matrix verb is not an isolated fact about Korean. Warlpiri (spoken in Central Australia), Tamil and Finnish, for example, all exhibit the same property, as illustrated for Warlpiri in (23a), for Tamil in (23b), and for Finnish in (23c) and (24):

- (23) a. Puluku-rlu kapu-lu marna nga-rni kuntukuntu-karda.
bullocks-ERG FUT-3pl grass-ABS eat-NPST fat-TRANSL
'The bullocks will eat [themselves] fat on the grass.' Warlpiri
(Simpson, 1983:153)
- b. Sureesh utaduhai kaaya tan taayai
Sureesh-NOM lip-PL-NOM dry-INF his-REFL mother-ACC
pukarntaan
praised-3rd.m.sg
'Sureesh praised his mother [causing his/*her] lips [to] dry.' Tamil
- c. Maria katseli olympialaisia silmänsä kipäksi.
Maria watched Olympics-PAR eye-PL-ACC.3Px sore-PL-TRA
(M.Vilkuna, p.c.) Finnish

4.1. Finnish

Some additional Finnish examples are given in (24).

- (24) a. Mä oon miettiny sitä pääni puhki.
I have thought [about] it-PAR head kaput
'I have thought about it [until] my head aches.' (Arto Anttila, p.c.)
- b. Sointu kiskoi kuormaa itsensä vasyksiin
Chris pulled load-PAR self-3Px tired
- c. (?) Sointu veti viinaa maksansa hajalle
Chris drank alcohol-PAR liver-3Px kaput

- d. (?) Opettaja karjui oppilaileen aanensa kaheaksi.
teacher-NOM screamed students-PL-ALL-3Px voice-3Px hoarse-TRA
'The teacher screamed at his/her students [until] his/her voice [became] hoarse.'

In Finnish, the subject of the result phrase is marked ACC, since ACC case denotes that the result state has been reached. This NP clearly gets its case-marking from the verb, as clearly shown by the fact that it gets marked partitive under negation, and is marked nominative under the same conditions that thematic objects are nominative, for example, if the matrix verb is imperative. (For discussion of such case alternations in Finnish, see Maling (1993) and references cited there.)

- (25) a. Vauva konttasi housunsa vihreiksi.
baby-NOM crawled pants-PL-ACC-3Px green-PL-TRA
'The baby crawled his/her pants green.' (Anne Vainikka, p.c.)
- b. Vauva ei kontannut housujansa vihreiksi.
baby-NOM not-3sg crawled pants-PL-PAR-3Px green-PL-TRA
'The baby did not crawl his/her pants green.'
- (26) a. Aivastin napin irti hameestani.
sneeze-Pst-1sg button-ACC loose skirt-ELA-1sgPx
'I sneezed a button off my skirt.' (Maria Vilkuna, p.c.)
- b. Aivasta nappi irti hameestasi.
sneeze-IMPER button-NOM loose skirt-ELA-2sgPx
'Sneeze a button off your skirt!'

If the subject of the result phrase co-occurs with a thematic object, then the thematic object of the matrix verb must be marked partitive and not accusative. This case-marking is exactly what one would expect in Finnish given that a resultative turns an atelic predicate into a telic one; ACC on the thematic object would denote that the result state has already been reached, and adding another result phrase would be incompatible. Recall that this semantic restriction was noted, for example, by L&R (1995) for English, to explain why verbs of inherently directed motion do not allow a resultative.

Both subjects and objects can control resultatives in Finnish under suitable circumstances, but the fake object construction, which creates a new object controlling a resultative, is restricted to subject orientation. It seems that the fake object necessarily bears a part-whole relationship to the subject, and hence almost always has the Possessive suffix glossed as 3Px. Since this suffix is always subject-oriented (independently of resultatives), an object oriented resultative with a body-part NP would be ungrammatical, as shown in (27).

- (27) Ranskalainen suuteli Annaa käden kipeäksi.
the.Frenchman kissed Anna-PAR hand-ACC sore-TRA
'The Frenchman kissed his/*Anna's hand sore.' (Maria Vilkuna, p.c.) †

4.2. Tamil

The resultative construction in Tamil seems to be almost identical to the Korean counterpart: the subject of the result phrase is marked NOM, and as a result, the construction is highly productive. The result phrase itself is marked with an "infinitival" suffix which has multiple uses in Tamil, like Korean. A nonthematic NP can occur with any verb type, not just unergative intransitives:

- b. Hoswu-ka ssek-ese koki-ka tungtungtu-ess-ta.
lake-NOM stagnate-CAUS fish-NOM float.up-Pst-Ind
'The lake stagnated, so the fish went belly up.'

In Chinese, as pointed out by Audrey Li (1990:45), only the result phrase can be negated, but not the main verb, since the result phrase is the "main predicate" in exactly the sense of Jackendoff. This is presumably true for resultatives in all languages: if the eventuality of the main verb is negated, then it cannot bring about the subsequent result that the resultative construction is all about.

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The sentence in (22) cannot mean that Robin didn't run. The same holds true for resultatives in Korean. But this spect of negation clearly does not hold for the *-ese* 'so that' clause illustrated in (21a,b). Yet another difference between the two constructions is that the resultative is subject to whatever (semantic) restriction accounts for the ungrammaticality of (18a), whereas the *-ese* clause is not, as illustrated by the contrast between (18a) and (21a).

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teacher-NOM screamed students-PL-ALL-3Px voice-3Px hoarse-TRA
'The teacher screamed at his/her students [until] his/her voice [became] hoarse.'

In Finnish, the subject of the result phrase is marked ACC, since ACC case denotes that the result state has been reached. This NP clearly gets its case-marking from the verb, as clearly shown by the fact that it gets marked partitive under negation, and is marked nominative under the same conditions that thematic objects are nominative, for example, if the matrix verb is imperative. (For discussion of such case alternations in Finnish, see Maling (1993) and references cited there.)

- (25) a. Vauva konttasi housunsa vihreiksi.
baby-NOM crawled pants-PL-ACC-3Px green-PL-TRA
'The baby crawled his/her pants green.' (Anne Vainikka, p.c.)
- b. Vauva ei kontannut housujansa vihreiksi.
baby-NOM not-3sg crawled pants-PL-PAR-3Px green-PL-TRA
'The baby did not crawl his/her pants green.'
- (26) a. Aivastin napin irti hameestani.
sneeze-Pst-1sg button-ACC loose skirt-ELA-1sgPx
'I sneezed a button off my skirt.' (Maria Vilkuna, p.c.)
- b. Aivasta nappi irti hameestasi.
sneeze-IMPER button-NOM loose skirt-ELA-2sgPx
'Sneeze a button off your skirt!'

If the subject of the result phrase co-occurs with a thematic object, then the thematic object of the matrix verb must be marked partitive and not accusative. This case-marking is exactly what one would expect in Finnish given that a resultative turns an atelic predicate into a telic one; ACC on the thematic object would denote that the result state has already been reached, and adding another result phrase would be incompatible. Recall that this semantic restriction was noted, for example, by L&R (1995) for English, to explain why verbs of inherently directed motion do not allow a resultative.

Both subjects and objects can control resultatives in Finnish under suitable circumstances, but the fake object construction, which creates a new object controlling a resultative, is restricted to subject orientation. It seems that the fake object necessarily bears a part-whole relationship to the subject, and hence almost always has the Possessive suffix glossed as 3Px. Since this suffix is always subject-oriented (independently of resultatives), an object oriented resultative with a body-part NP would be ungrammatical, as shown in (27).

- (27) Ranskalainen suuteli Annaa käden kipeäksi.
the.Frenchman kissed Anna-PAR hand-ACC sore-TRA
'The Frenchman kissed his/*Anna's hand sore.' (Maria Vilkuna, p.c.)

4.2. Tamil

The resultative construction in Tamil seems to be almost identical to the Korean counterpart: the subject of the result phrase is marked NOM, and as a result, the construction is highly productive. The result phrase itself is marked with an "infinitival" suffix which has multiple uses in Tamil, like Korean. A nonthematic NP can occur with any verb type, not just unergative intransitives:

- (28) *unergative*
- a. Avan nambu pudaikka kattinaan. Tamil
 he-NOM vein-NOM bulge-INF scream-PAST-3rd.m.sg
 'He screamed [his] veins [to] bulge.'
- transitive*
- b. Sureesh utaduhai kaaya tan taayai pukarntaan.
 Suresh-N lip-PL-NOM dry-INF his-REFL mother-ACC praised-3rd.m.sg
 'Suresh praised his mother [causing his/*her] lips [to] dry.'
- unaccusative*
- c. Pani teru nanaiya urugiyatu
 snow/ice-NOM street-NOM become.wet-INF melt-PST-neut.sg
 'The snow melted [causing] the street to become wet.'
- triadic*
- d. Avan meejaiin kaalkal odiya saapaddai
 he-N table-POSS leg-PL-NOM break-INF food-ACC
 meejaiyil vaittaan.
 table-LOC put-PST-3rd.m.sg
 'He placed the food on the table [causing] table legs to break.'
- (29) *Verb of inherently directed motion (depictive reading only)*
 Naan muuchu iraiikka vantu seertteen.
 I-NOM breath-NOM weeze-INF arrived-1st.sg
 'I arrived breathlessly.'

Negation of Resultatives: negation of the matrix (sentence-final) verb negates the resultative predicate, and leaves open the possibility of the action (state, event) of the matrix verb:

- (30) Avan vayiru valikka sirikkavillai.
 he-NOM stomach-NOM pain-INF smile-INF-NEG
 'He smiled but not to the point of causing his stomach pain.'

5. Problems and Theoretical Issues

The comparison of these languages with English raises some questions about the English resultative construction. The fact that the result phrase can be subject-oriented (via a reflexive or inalienable possession) indicates that the rigid syntax of the resultative construction in English cannot follow directly from any locality condition on predication itself; rather, the limited range of predication in the English resultative construction should be taken to be a consequence of its rigid syntax. On this point, we agree with Carrier & Randall (1992; ms) who also argue based on data from English against taking predication to be the crux of the explanation for why the English resultative construction has a rigid syntactic template. This parametric difference regarding predication must be the consequence of whether or not resultative constructions can be granted syntactic freedom. Whereas resultatives in English must occupy a designated syntactic position, those in Korean need not. Hence resultatives in Korean may occur either inside or outside the VP.

This in turn raises a question about the nature of the observed syntactic rigidity of the English resultative construction. Assume for now the Linking Rule proposed by Levin & Rappaport-Hovav, which restricts the syntactic position that English resultatives can occur in to a position governed by the matrix verb. Most of the peculiar properties of the construction follow directly from the DOR. For example, as discussed by Yamada (1987)

and C&R (1992) among others, the subject of the result phrase, or the result phrase itself, patterns with a complement NP with respect to extraction and island effects, even when the subject of a result phrase is not thematically related to the matrix verb. The fact that the subject of a result phrase in Korean bears nominative, however assigned, is clear evidence that it occurs in a position which is not governed by the matrix verb, hence no verbal Case is available for it. But the question remains why it is that resultatives must use a certain syntactic template in English but not in Korean. No doubt part of the answer lies in the different sources of Case for the subject of the result phrase. But Case cannot be the sole explanation for the rigid syntactic template of the English resultative construction, as we will show below. Thus the parametric differences between English and Korean, or more generally, crosslinguistically, obviously call for an explanation.

No researchers working on resultatives have taken the view that a purely syntactic account is viable for resultative constructions. Yet the syntactic restrictions on resultatives in a language like English are clear. The central issue at stake is the syntax-lexicon mapping: how does the resultative construction get associated with the theta-grid of the matrix verb, and how is the mapping realized syntactically? Goldberg (1995:81f) notes a curious thematic restriction on English resultatives: "[resultatives] cannot be applied to the theme argument of ditransitive expressions... but can occur with prepositional complements that are not directionals." She provides the following examples to illustrate this:

- (31) a. *Joe kicked Bob the suitcase open. (Goldberg 1995:81f)
 b. *Sam kicked Bill black and blue out of the room.
 c. He pried the door open with a screwdriver.

The term "ditransitive expression" is misleading, however, since examples like (32a-c) are acceptable:

- (32) a. The bartender fixed me my martini dry.
 b. The chef cooked me my steak well-done.
 c. %I was fixed my martini dry.

The difference between (31a-b) and (32a-b) is that in the latter, the immediately postverbal NP is a benefactive, not a goal. We suggest that the relevant difference is that unlike a goal NP, a benefactive NP is not an argument of the matrix verb. First, for many speakers, it does not passivize. Second, there are co-occurrence restrictions which show that the goal has priority over a benefactive if competing for the single "indirect object" position of a ditransitive verb:

- (33) a. The professor wrote me a letter of reference. (goal or benefactive)
 b. The professor wrote me a letter of reference for her student.
 c. *The professor wrote her student a letter of reference to me.

Either a goal or benefactive reading is available for the immediately postverbal NP in (33a). But when the goal and benefactive co-occur, one of them must be realized as a PP. The contrast between (33b) and (33c) shows that the goal has priority for the NP-realization, which suggests that it has argument status, whereas the benefactive does not.

For the sake of argument, let us reconsider the Linking Rule stated in (6) in some detail. The problem with this rule becomes apparent when we take ditransitive verbs into consideration. Hedging a bit on the formulation of the rule, L&R offer two versions, one referring to government, and the other to the immediately postverbal (i.e. "direct object") position. Triadic verbs, however, pose a problem for either formulation. The examples in

(32) appear to be counterexamples to the DOR, since the resultative occurs in a position which is not immediately postverbal due to the intervening benefactive NP. Furthermore, even if we assume that the benefactive is a non-argument, a simple argument-adjunct dichotomy fails to account for the distribution of resultatives with triadic verbs. Consider first the examples in (34):

- (34) a. *They deprived him poor/blind of his inheritance.
 b. *The exterminators rid the room empty of insects.
 c. *The king rewarded/paid him rich with gold.
 d. Will no one rid me (*free) of this troublesome priest? (Moirá Yip, p.c.)

The subject of the result phrase in each of (34a-d) does appear to satisfy the licensing condition: it is immediately postverbal and is also governed by the matrix verb. Further, the subject of the result phrase is not obviously a theme argument, either, and thus appears to satisfy Goldberg's thematic restriction. It is the postverbal PP, which is an internal argument of the matrix verb in isolation, in contrast to the PP in (31c) above and (35) below, which appears to be responsible for the ill-formedness of all the ungrammatical examples in (34).

- (35) a. They wiped the table clean of dirt. (Pinker, 1989:81)
 b. They loaded the wagon full of hay/%full with hay.
 c. They loaded the wagon full quickly (*of hay/%with hay)
 d. I filled the tank full with premium, but Kim did so with regular.

The relevant difference is whether the postverbal PP is a non-argumental PP, as in (31c) and (35c,d), or forms a constituent with the result phrase, as in (35a,b). For instance, *clean of dirt* in (35a) is an AP-constituent, whereas *blind of his inheritance* in (34a) or *rich with gold* in (34c) is not. The contrast in (36) makes the same point.

- (36) a. They drained the account dry of money.
 b. *They drained the account dry of my contribution.

Example (36b) is unacceptable because of the presence of the adverbial PP *of my contribution*, whereas in (36a) *dry of money* is a single constituent.

Recourse to government relations, Case-assignment or predication relations fails to predict the ill-formedness of resultatives in ditransitive contexts, given that both NPs in the double object construction must get Case from, and therefore are presumably governed by, the matrix verb. Despite the fact that certain ditransitive verbs in English (e.g., *pay, serve, feed, tell, teach*) allow their theme objects to be unspecified, and hence leave an extra syntactic slot available, the resultative construction appears not to occur with such ditransitives, as illustrated in (37):

- (37) a. *Robin wrote me my hair on end.
 b. *Kim paid the divorce lawyer his/her pockets empty
 c. *Kim paid the divorce lawyer him/herself broke.
 d. *Chris taught me my mind swimming.

Similarly, consider verbs that take obligatory *with*-phrases, as illustrated in (38) and as discussed by Jackendoff (1990:177). Resultatives are impossible with verbs of this class, as shown by the contrast between (38) and (39):

- (38) a. The storm capped the mountain with snow. (cf. Jackendoff, 1990:177)
 b. The town planner lined the street with trees.
 c. The dwarves encrusted the throne with jewels.

- (39) a. *The storm capped the mountain white with snow.
 b. *The town planner lined the street shady with trees.
 c. *The dwarves encrusted the throne gaudy with jewels.

Summarizing, the following descriptive generalizations hold for English:

- (40) a. the sequence [NP A PP] forms an acceptable resultative construction only when:
 (i) the PP is not an argument, or
 (ii) the A-PP sequence forms a single AP-constituent.
 b. the sequence [NP NP AP] forms an acceptable resultative construction only if the first NP is a benefactive.

The significance of these generalizations is that in English, there is room only for a single argument NP in the resultative construction. The occurrence of any additional internal argument of the matrix verb excludes the resultative. This generalization subsumes Goldberg's thematic restriction, and extends naturally to all triadic predicates, including ditransitives. This fact cannot be adequately accounted for by any theory of resultatives that takes only the thematic relation between the subject of the result phrase and the matrix verb into consideration, however the relationship may be formalized. An adequate theory of resultatives must account for the interference effect caused by the presence of the matrix verb's other subcategorized argument distinct from the one serving as the subject of the result phrase. Obviously, this interference effect cannot be detected for verbs that optionally subcategorize for a single object, but is visible only for triadic or ditransitive verbs.

6. The Proposal

We have shown that there is room only for a single argument NP in the English resultative construction. We suggest that this generalization can be accounted for by argument structure restructuring. More specifically, we suggest that the resultative construction in English involves a radical restructuring of the theta-grid of the matrix verb that turns it into a monotransitive verb that subcategorizes for one and only one object position, possibly in the form of a complex predicate.² As a result of this restructuring process, triadic or ditransitive verbs undergo deconstruction of their argument structure in that one of the two internal arguments must be suppressed (i.e., argument demotion without subsequent promotion). Unergative intransitives also undergo restructuring, but this time, the effect is argument promotion, turning intransitives into transitives. But transitive verbs that subcategorize obligatorily for a single complement remain unaffected, since they are already monotransitives.

Many properties follow immediately from this mode of argument structure restructuring. First, the descriptive generalizations given in (40) receive an immediate explanation. An adjunct may follow the resultative, but no argument NP or PP associated with the theta-grid of the matrix verb prior to restructuring can co-occur with the resultative. Given that the verb subcategorizes for only one object position after Resultative Formation, any extra internal argument will result in a violation of the Theta Criterion (or eventually a violation of the Projection Principle). It remains unclear how to analyze the case of double object verbs where the first NP is a benefactive, as in (32) above, if these are indeed resultatives, as generally assumed in the literature, but on the plausible assumption that a benefactive NP is an adjunct rather than an argument, such examples need not constitute counterevidence to the present analysis.

² Edwin Williams (p.c.) pointed out that this is reminiscent of the effect of *out-* prefixation, which also has the effect of creating a transitive verb.

Second, the fixed syntax of the resultative construction follows naturally given the fixed syntactic realization of direct objects in English. Third, on this analysis Resultative Formation is a lexical rule that belongs in the lexicon, since it involves argument structure changing. We must stress that this does not mean that for unergative intransitive verbs, Resultative Formation makes the subject of the result phrase the thematic object of the matrix verb. By "monotransitivization" we mean that the matrix verb comes to subcategorize for a single object position in the form of [V XP]. For unergative intransitives, this object position will be filled with a small clause constituent, namely the result phrase and its subject, which is not thematically related to the matrix verb in isolation. This explains the occurrence of a "fake (reflexive) object" NP, which will then be required by the Projection Principle. But for transitive verbs, this object position can still be filled by the thematic object of the verb in isolation, since Resultative Formation applies to them vacuously. The consequence is that transitive-based resultatives, such as *I boiled the kettle dry*, and intransitive-based resultatives, such as *Garfield ate himself sick*, need not have the same syntactic configuration; the structures could be [V NP AP] for the former but [V [SC NP AP] for the latter. This analysis fully accounts for other syntactic properties of resultatives that have been noted by C&R (1992, ms), L&R (1995), and Yamada (1987), among others. Space limitations preclude further discussion of this point.

Fourth, Resultative Formation will leave unaccusative verbs unaffected, since like transitives, they have an underlying object position. Assuming the Unaccusative Hypothesis, resultatives will continue to provide a diagnostic for unaccusativity in English, though not universally.

Fifth, the present analysis makes another important prediction: when the matrix verb is transitive in isolation, the AP predicate that follows the object NP may be ambiguous between a resultative and a depictive reading, but no such ambiguity can arise for the verbs that have undergone Resultative Formation nonvacuously, i.e. unergative intransitives and triadic verbs, including ditransitives. This prediction is confirmed:

- (41) *Transitive verb*
- a. The lioness chewed his knuckles raw. (C&R, 1992:207)
 - (i) resultative: his knuckles became raw
 - (ii) depictive: his knuckles were already raw
- Unergative with fake reflexive*
- b. She laughed herself silly.
 - (i) resultative: she became silly
 - (ii) *depictive: she was already silly
- Oblique object*
- c. Bill shaved his razor dull.
 - (i) resultative: the razor became dull.
 - (ii) *depictive: the razor was already dull.
- Unaccusative verb*
- d. The miser died rich.
 - (i) *resultative: the miser became rich by dying
 - (ii) depictive: the miser was already rich at the time of death

The reason for this contrast should by now be clear. As a mere adjunct, a depictive phrase never triggers any argument structure changing, but a result phrase forces restructuring of the theta-grid of the matrix verb as in (41b,c), hence the AP simply cannot be interpreted as a depictive. If it were, then (41b,c) would be ruled out as a violation of the Theta-Criterion. But crucially, the effect of Resultative Formation on monotransitive verbs is

always vacuous in that the addition of a result phrase does not lead to restructuring of the verb's theta-grid in any relevant sense, and hence has no visible syntactic effect. This is not to say that the result phrase in (41a) has no semantic effect. In fact, it does (and must) affect the eventuality of the matrix verb since the result phrase serves to delimit the end state of the activity denoted by the verb. We suggest that the semantic effect of the result phrase for the transitive verb in (41a) can be dealt with adequately in the conceptual structure of the compositional semantics of the whole sentence along the lines of Jackendoff (1990). Note that the reason (41d) cannot be interpreted as a resultative is that it is an achievement verb.

Sixth, since Resultative Formation creates a transitive verb that subcategorizes for a single object position, it subsequently has the effect of "promoting" an oblique object to a direct object-like status. The result is deletion of the preposition associated with the oblique object of the verb in isolation, as illustrated in the examples from Jackendoff (1990:227) given in (5) above, repeated as (42):

- (42) a. Fred cooked (*on) the stove black.
 b. The professor talked (*to) us into a stupor.
 c. Bill shaved (*with) his razor dull.

This must be the case for two reasons. Since the result phrase makes the matrix verb a transitive verb due to Resultative Formation, a preposition need not, and must not, occur with the subject of the result phrase. If, on the other hand, a small clause analysis is assumed for the result phrase and its subject, the preposition still cannot co-occur with the postverbal NP, since a PP cannot be the subject of a small clause. Hence on the present account, an intransitive verb is not a potential Case-assigner but rather a genuine Case-assigner when it appears in the resultative construction due to the lexical process of Resultative Formation.

Finally, on our account the difference between English and Korean is that Korean has no such lexical restructuring rule as Resultative Formation. Hence the result phrase never promotes to argument status, but remains an adjunct clause. As a result, the construction never gets "frozen up" syntactically, but can occur either inside or outside VP. This accounts for the flexibility in predication noted in Section 3. As an independent adjunct clause, the construction must have its own source for Case on the subject of the result phrase, which cannot get verbal Case when it is not a thematic object of the matrix verb. That is, the resultative construction does not fall under the Case domain of the matrix verb, unlike ECM constructions or adverbial adjuncts of various types studied in detail in Maling (1989) and Kim & Maling (1993; 1997).

7. Conclusion

The present account differs crucially from the accounts suggested by Carrier & Randall (1992; ms) and Levin & Rappaport-Hovav (1995), for example, who argue that "the lexical representation of a verb in the resultative construction does not [original emphasis] differ from that of the same verb in isolation" (L&R, p.43). As we have shown, however, this view runs into trouble precisely for ditransitive and triadic verbs, since the fact that the resultative construction is not compatible with verbs that require more than one internal argument cannot receive a principled explanation "if the matrix verb projects the same argument structure in the resultative construction as it does in isolation" (L&R, p.43). And as far as we can see, there is nothing in these authors' theories that circumvents the full realization of the argument structure of a ditransitive or triadic verb in the resultative construction, which we take to be a serious empirical flaw inherent in any account that denies argument structure changing in the resultative construction.

Furthermore, a structural account such as L&R's has another problem of accounting for the cross-linguistic variation in resultative constructions. Why, for example, would the government condition on resultatives have to be relaxed in Korean? Given that Korean allows multiple accusative-case constructions, and hence offers rich resources for Case, it isn't immediately clear why resultatives in English and Korean should show such radical differences. After all, L&R's Change-of-State Linking Rule is a descriptive generalization to be accounted for, and as such, it does not appear to shed any insightful light on the cross-linguistic variation noted in this paper.

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French Relative Clauses as Secondary Predicates*

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1. The Perception-Verb Relative Construction

It has often been observed, both by traditional grammarians and by contemporary linguists, that the relative clause (RC) in a French sentence like that in item (1), has (at least) three different readings, as suggested by the three English glosses:

- (1) J'ai vu le professeur qui fumait.
a. 'I saw the professor who was smoking.'
b. 'I saw the professor, who was smoking.'
c. 'I saw the professor smoking.'

The clause introduced by *qui* can be a Restrictive Relative (hereafter RR), or an Appositive Relative (hereafter APR), or it can have a function similar to that of the so-called 'perception verb complement' (Akmajian, 1977) in the third English gloss. I will refer to the French relative clause in the third reading as a 'Perception-Verb Relative' (hereafter PVR).

To give the non-francophone reader a feel for the construction, I have listed below a number of attested examples. These examples are grouped into three sets, according to the type of matrix-clause predicate. The first set contains sentences whose predicate is a verb of perception proper (the predicate *voici* in (2c) is a frozen form of *voir* 'see'):

- (2) PREDICATES of PERCEPTION:
a. J'entends mon matelot qui fredonne. (V. Hugo)
'I hear my sailor humming.'
b. Mathilde regarde son cauchemar qui avance. (F. Mauriac)
'Mathilde is watching her nightmare advancing.'
c. Me voici qui attends le jour. (Grevisse, 1959)
'Here I am, waiting for the daylight.'
d. C'est la petite Cavinet. En remontant, tout à l'heure, je l'ai aperçue qui se faisait embrasser par le fils Martinez dans le garage à vélos! (Les Bidochon, comic)
'It's the little Cavinet girl. When I came upstairs just now I saw her being kissed by the Martinez kid in the bicycle shed!'

* For help and advice I would like to thank Bill Ladusaw, Joan Maling, Laura Michaelis, Jean-Pierre Montreuil, Masha Polinsky, and Steve Wechsler. Special thanks go to Jean-Pierre Koenig, Adele Goldberg, and Paul Kay.