The Distribution of Resultatives in Japanese

Tsuneko Nakazawa
University of Tokyo

This paper proposes an analysis of the interpretation of the Japanese resultative construction. Resultative phrases can be predicated not only of the object of transitive verbs and the subject of unaccusative intransitive verbs, as usually assumed, but also of the subject of transitive verbs, dative NPs, and even entities not expressed in sentences. It is shown that, although the resultative construction is not totally productive as is the case with the English counterpart, the entities that undergo a change of state in the event described by a verb can constitute the semantic subject of resultative phrases regardless of grammatical functions or formal semantic roles given to the linguistic expressions referring to those entities. A constructional analysis is proposed which identifies those entities in the lexical semantics of main verbs.

1.   The resultative construction in Japanese

The resultative phrase is most generally characterized as the second predicate to describe the state of an argument of the main verb, which results from the event denoted by the verb. It is generally understood (e.g. Koizumi 1994, Takezawa 1993, Washio 1997) that resultative phrases in Japanese are classified into two types: object-oriented resultative phrases with a transitive verb as in (1), and subject-oriented resultative phrases with an unaccusative intransitive verb as in (2). (In the following examples, resultative phrases are underlined while the semantic subjects of resultative phrases are in bold.)

(1)   Taro-ga   **kabin**-o   <u>konagona-ni</u> kowas-ita.
       Taro-NOM   vase-ACC   pieces-NI   break-PAST
       'Taro broke a vase into pieces.'

(2)   **hata**-ga <u>taka-ku</u> agat-ta.
       flag-NOM high-KU rise-PAST
       'The flag went up high.'

In example (1), which is headed by a transitive verb *kowas-* 'break', the resultative phrase *konagona-ni* 'into pieces' describes the state of the referent of object NP *kabin* 'vase' which results from Taro's breaking it. In example (2), which is headed by an unaccusative intransitive verb *agat-* 'rise', the resultative phrase *taka-ku* 'high' describes the result state of the referent of subject NP *hata* 'flag' after rising.

The two types of resultatives in Japanese conform to the general characteristic of resultatives in English, originally observed and analyzed by Simpson (1983). The generalization is later dubbed Direct Object Restriction (Levin and Rappaport Hovav 1995) because the direct object of transitive verbs and the subject of unaccusative intransitive verbs are the 'surface object' and the 'underlying object' respectively under the Unaccusative Hypothesis. In non-derivational frameworks, analyses have been proposed to characterize resultative phrases as infinitival complements in the control/raising constructions to account for the obligatory interpretation of their semantic subjects without recourse to unaccusativity (e.g. Wechsler 1997, Müller 2002).

Japanese, however, lacks the third type of resultative phrases observed in Simpson (1983), which appear with a non-argument as the semantic subject: e.g. *I cried **my eyes** <u>blind</u>*, and *I ate **myself** <u>sick</u>* (Simpson 1983:146). The post-verbal NPs, called 'fake objects', in these examples are not given a semantic role by the unergative intransitive verb or the transitive verb (i.e. *myself* does not refer to what is eaten). Since the resultative construction in Japanese does not allow fake objects, the alternation of the valence patterns of main verbs does not occur and sentences are grammatical without resultative phrases, i.e. resultative phrases are always optional.

The head of resultative phrases in Japanese can be a noun such as *konagona-* 'pieces' in (1), an adjective such as *taka-* 'high' in (2), or an 'adjectival noun' such as *petyanko-* 'flat' below. The

syntactic and semantic functions of adjectival nouns are the same as those of adjectives, but their declension is similar to that of nouns; nouns and adjectival nouns are suffixed by *-ni*, and adjectives are suffixed by *-ku* in resultative phrases as shown in the examples above. These morphological forms are, however, not unique to the resultative construction, and they also mark e.g. conjuncts of coordinated phrases and derived adverbials. On the other hand, unlike English, resultative phrases in Japanese are morphologically distinct from depictive phrases, which are headed by nouns and adjectival nouns suffixed by *-de* (e.g. Takezawa 1993, Koizumi 1994).

2.   The predictability of result states

Since Green (1972), it has repeatedly been pointed out that collocations of particular verbs and resultative phrases are to some extent conventionalized, or idiosyncratic, in English. It is also true in Japanese and expressions of imaginable results are not always acceptable: e.g. **hutatu-ni kowas-ita* 'broke into two pieces' is not acceptable while *konagona-ni kowas-ita* 'broke into pieces' in (1) and *mapputatu-ni kowas-ita* 'broke into exact halves' are.

Furthermore, the state described by resultative phrases is often predictable, or 'canonical or generic' (Wechsler 1997), from the event denoted by the main verb. As a consequence, it is often (but not always) the case that only one of the members of antonym pairs is acceptable as a resultative phrase: e.g. *John washed the clothes clean/*dirty*. Washio (1997) calls these resultative phrases which describe a predictable result 'weak resultatives', and according to him, the Japanese resultative construction allows only 'weak resultatives'. Furthermore, Japanese lacks resultatives with non-subcategorized arguments as discussed above, and those are the types of resultatives in English, as Wechsler (1997) points out, which do not require the expressed result to be predictable. Thus, the Japanese resultative construction is more limited than English in that it only expresses predictable results.

Given that resultative phrases generally describe a predictable change of state of an argument of the main verb, it is not surprising that not all theme arguments, i.e. objects of transitive verbs and subjects of unaccusative intransitive verbs, serve as the semantic subject of resultative phrases since not all events described by verbs involve a change of state of the theme argument. Koizumi (1994), building upon Miyagawa's (1989) classification of Japanese verbs, claims that only 'affected theme transitive' verbs allow resultative phrases. Kageyama (1996; 2001) claim that resultative phrases appear only with a class of verbs which he analyzes as 'jotai-henka doshi [state-change verbs]', and Nitta (2002) calls a similar class of transitive verbs 'taisho-henka doshi [theme-change verbs]'. Accordingly, transitive verbs such as *tatak-* 'hit, pound' and *nagur-* 'hit' are often cited as transitive verbs that describe the events which do not entail a particular change of state of the theme argument, and hence do not allow resultative phrases: e.g. ??*John-ga* **kinzoku***-o* <u>petyanko-ni</u> *tatai-ta* 'lit. John pounded the metal flat' (Washio 1997:5).

For the English resultative construction, Rappaport Hovav and Levin (2001) claim that the semantic subject of resultative phrases must be a 'force recipient' if there is one, that is, the recipient of a transmitted force in the event described by the verb, which is usually expressed by the object NP of transitive verbs. While it is not clear whether or not these notions predict exactly the same list of verbs, these attempts indicate that a classification of verbs according to more than the valence pattern is necessary to account for the distribution of resultative phrases. In particular, it is crucial to identify the arguments which are perceived as undergoing a change of state as a result of the described event, and can consequently be interpreted as the semantic subject of resultative phrases.

3.   The interpretation of resultative phrases

In the following sections, the examples are analyzed which do not conform to the typical patterns of object-oriented and subject-oriented resultatives discussed above. It is shown that semantic subjects of resultative phrases are not limited to the theme argument, but they include the referent of subject NP of transitive verbs, dative NPs, and even entities not expressed in a sentence. A few authors have pointed out some of these examples, regarding them as either exceptions or not instances of the resultative construction (with an exception of Miyakoshi 2006). The distribution of atypical resultative phrases is, however, much more pervasive than those authors assume, and the only generalization that encompasses all types is that the resultative phrases describe the entity that undergoes a change of a state in the event described by the verb, regardless of their syntactic functions or formal semantic roles.

In example (3), although the verb *oot-* 'cover' is a transitive verb, the resultative phrase *atu-ku* 'thick' describes the layer of leaves, i.e. the referent of subject NP *ha* 'leaves', rather than object NP *zimen* 'ground' as predicted by the typical pattern.

(3) huritumot-ta **ha**-ga   zimen-o   <u>atu-ku</u>   oot-ta. (*Seirouki* by Shuhei Nire)
    fall-PAST   leaf-NOM ground-ACC thick-KU   cover-PAST
    'lit. Fallen leaves covered the ground thick.'

In order to explain subject-oriented resultative phrases with a transitive verb (e.g. ***The wise men followed the star <u>out of Bethlehem</u>***. (Wechsler, 1997:313)), Rappaport Hovav and Levin (2001) claim that when the object NP does not carry the semantic role of 'force recipient', though the object of transitive verbs usually does, resultative phrases are free to be predicated of the subject NP. Thus, the subject-oriented resultative phrase in (3) would imply that the object NP *zimen* 'ground' in (3) is not a force recipient, but, contrary to the implication, it is acceptable to include an object-oriented resultative phrase in (3): e.g. *ha-ga **zimen**-o <u>kareha-iro-ni</u> oot-ta* 'lit. Leaves covered the ground dead-leaf colored'. Apparently, the described event of covering the ground is perceived as involving a change of state of the referents of both subject and object NPs, and resultative phrases are easily interpretable as describing either of them.

Unlike the English resultative construction, resultative phrases can be predicated of a dative NP in Japanese as (4) and (5) show.

(4) Taro-ga   **kabin**-ni penki-o   <u>aka-ku</u>   nut-ta.
    Taro-NOM vase-DAT paint-ACC   red-KU   apply/cover-PAST
    'lit. Taro applied paint to the vase red. (Taro painted the vase red.)'

(5) komugiko-ga **yuka**-ni   <u>siro-ku</u>   tirabat-teiru. (Nitta 2002:52)
    flour-NOM   floor-DAT white-KU   scatter-STATIVE.PAST
    'lit. Flour is spread on the floor white.'

In (4), the resultative phrase *aka-ku* 'red' describes the result state of the referent of dative NP *kabin* 'vase', rather than the object NP *penki* 'paint' since the paint is red to start with. In (5) with an unaccusative intransitive verb *tirabat-* 'scatter', the resultative phrase *siro-ku* 'white' describes the referent of dative NP *yuka* 'floor', not the subject NP as expected.

The interpretation of resultative phrases does not seem to be restricted by the syntactic function of the NPs that serve as their semantic subjects. The transitive verb *nut-* 'paint' in (4) is a locative-alternation verb and exhibits valance patterns similar to English verbs *spray* and *load*. Thus, example (4) can be paraphrased as (6):

(6) Taro-ga   **kabin**-o   penki-de   <u>aka-ku</u> nut-ta.
    Taro-NOM vase-ACC paint-INSTRUMENTAL   red-KU apply/cover-PAST
    'lit. Taro covered the vase with paint red. (Taro painted the vase red.)'

As is the case with (4), the resultative phrase *aka-ku* 'red' is predicated of the vase in (6), which conforms to a typical pattern of object-oriented resultative phrases with a transitive verb. The equal acceptability of (4) and (6) sharply contrasts with the Direct Object Restriction on English resultative construction which is frequently pointed out: *John loaded **the wagon** <u>full</u> with hay* vs. **John loaded the hay into **the wagon** <u>full</u>* (Williams 1980:204). Since these sentences are near synonymous, the restriction which blocks the prepositional object from being the semantic subject of the resultative phrase is syntactic in nature. The acceptability of (4), on the other hand, suggests that the way the referent of an NP is affected by the described event is more critical in the Japanese resultative construction regardless of its syntactic function.

Miyakoshi (2006), citing an example similar to (4), claims that arguments which carry the goal role can be interpreted as the semantic subject of resultative phrases in Japanese since the goal, as well as the theme, often undergoes a change of state in an event. While the claim accounts for the interpretation of (4) and (5), the notion of goal is not enough to predict the semantic subject of all resultative phrases. The resultative phrase *aka-ku* 'red' in (4) and (6) can be replaced by another resultative phrase predicated of *penki* 'paint': e.g. *kabin-ni/o **penki**-o/de <u>atu-ku</u> nut-ta* 'lit. applied paint thick to the vase/covered the vase with paint thick'. In the described event, both the vase and paint

undergo a change of state, and hence can play the role of semantic subject of resultative phrases; *penki* 'paint' in (6), however, is neither the direct object NP nor the argument carrying the goal role.

The following example (7) shows that the resultative phrases can also be predicated of entities not explicitly expressed in the sentence.

(7) dosya-o   sarat-te   kawazoko-o   huka-ku   hor-ana-kereba ... (*Agoozi-no Kawa*
    sediment-ACC remove-and riverbed-ACC deep-KU   dig-not-if   by Kageki Shimoda)
    'unless (one) removes sediment and dig the riverbed deep, ...'

The resultative phrase *huka-ku* 'deep' describes the result state of a hole which is created by the event of digging, but not expressed in the sentence. The verb *hor-* 'dig' is a creation verb and can also take *ana* 'hole', i.e. the product of digging, as an object NP, giving rise to a typical object-oriented resultative: *kawazoko-ni **ana**-o huka-ku hor-u* 'dig a hole deep in the riverbed'. Example (7), however, lacks an expression which can be interpreted as the semantic subject of the resultative phrase. Verbs of disappearance have a similar problem with resultative phrases, since accompanying resultative phrases cannot be interpreted as description of the referent of object NP which ceases to exist as a result of the event: e.g. *yama-o taira-ni kezuru* 'lit. scrape the mountains flat'.

Finally, (8) is an example of resultative phrases with an unaccusative intransitive verb *koor-* 'freeze', but the resultative phrase is not predicated of the subject NP *kosui* 'lake water'.

(8) mahuyu-ni   naru-to   kosui-wa   atu-ku   kooritui-te ...   (*Kimitsu Bunsho*
    midwinter-DAT become-when lake.water-TOP thick-KU freeze-and   by Ikko Shimizu)
    'lit. When it becomes mid winter, lake water freezes thick and ...'

In (8), the resultative phrase *atu-ku* 'thick' describes ice that inevitably comes into being as a result of the freezing event. Pustejovsky (1995) calls such an entity 'shadow argument' which is entailed, but not expressed, by the lexical semantics of verbs, and example (8) shows that a shadow argument is available as the semantic subject of resultative phrases. Wechsler and Noh (2001), citing a similar example in Korean (*kang-i twukkep-key el-ess-ta* 'lit. The river froze thickly'), claim that *twukkep-key* 'thick' is not a resultative phrase but an adverbial use of the adjective which describes 'a thick manner' of the freezing event. The suffix *-key* is attached to adjectives in Korean to form adverbials as well as resultative phrases, just like the inflectional ending *ku-* is suffixed to adjectives in Japanese. However, aside from the fact that the phrase lacks a possible semantic subject among the complements of the verb, there does not seem to be any independent evidence to consider the example as distinct construction from the resultative in either Korean or Japanese.
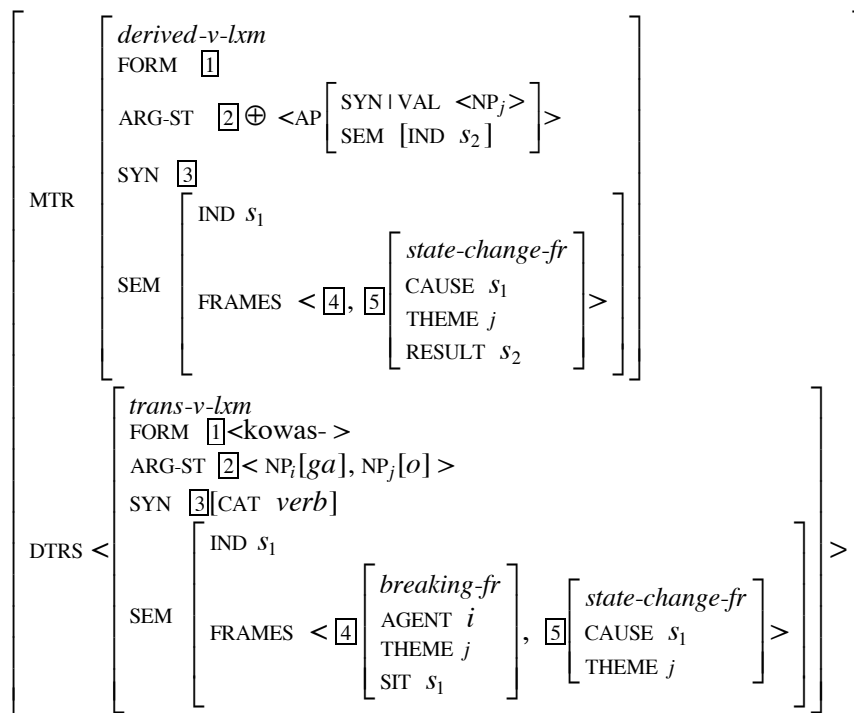
4. Formal analyses

The previous section shows that the Japanese resultative construction does not conform to the Direct Object Restriction, or the obligatory subject interpretation of unsaturated complements in the control/ raising constructions. Rather, the flexibility of interpretation suggests that the semantic subject of resultative phrases is determined on semantic and pragmatic grounds. In spite of a variety of syntactic (non)realizations, the semantic subject of resultative phrases can easily be interpreted because the lexical semantics of verbs identifies the participants of an event that undergo a change of state and the predictable results. As Boas (2003) argues, such meaning components may not be relevant for the interpretation of other constructions, but are still present and crucial for the resultative construction as well as some other constructions (e.g. the progressive/stative ambiguity of the *-teiru* construction) not explored in this abstract.

The resultative construct in (9), cast in the feature representation in Sag (2012), shows a lexical alteration from a transitive verb lexeme *kowas-* 'break' (the single member of DTRS) to a derived lexeme (the MTR) which takes a resultative AP as a member of ARG-ST.

As shown in the transitive verb in DTRS, the SEM(antics) value of the lexeme is lexically specified to include both frames for a breaking event, the *breaking-fr* in [4], and a change-of-state event, the *state-change-fr* in [5]. The SIT(uation) index s_1 of the *breaking-fr* is identical to the verb's IND(ex) s_1. The *state-change-fr* specifies that the argument *j* undergoes a change of state, caused by the breaking event s_1. In the derived verb in MTR, the (unexpressed) subject NP$_j$ of the resultative phrase is identified with the argument *j*, which is specified in the *state-change-fr* to undergo a change of state, and the IND(ex) s_2 of the resultative phrase is added as the RESULT value of the *state-change-fr*, ensuring that the
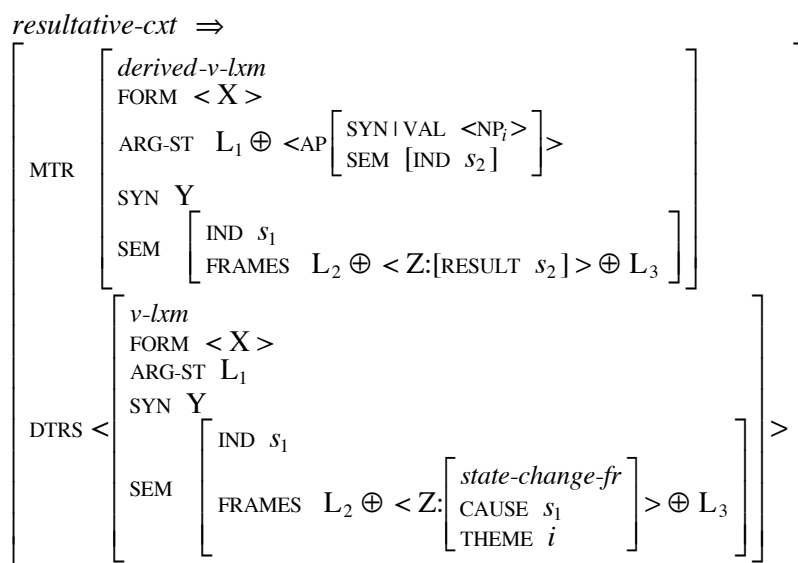
description of result will be predicated of the argument *j* and is contributed to the FRAMES value as the frame of the resultative phrase.

(9) a resultative construct

$$
\begin{bmatrix}
\text{MTR} & \begin{bmatrix}
\textit{derived-v-lxm} \\
\text{FORM} \quad \boxed{1} \\
\text{ARG-ST} \quad \boxed{2} \oplus \left\langle \text{AP}\begin{bmatrix} \text{SYN|VAL} & <\text{NP}_j> \\ \text{SEM} & [\text{IND} \ s_2] \end{bmatrix}\right\rangle \\
\text{SYN} \quad \boxed{3} \\
\text{SEM} \begin{bmatrix} \text{IND} \ s_1 \\ \text{FRAMES} \ \left\langle \boxed{4}, \boxed{5}\begin{bmatrix} \textit{state-change-fr} \\ \text{CAUSE} \ s_1 \\ \text{THEME} \ j \\ \text{RESULT} \ s_2 \end{bmatrix}\right\rangle \end{bmatrix}
\end{bmatrix} \\[2em]
\text{DTRS} \left\langle \begin{bmatrix}
\textit{trans-v-lxm} \\
\text{FORM} \quad \boxed{1}<\text{kowas-}> \\
\text{ARG-ST} \quad \boxed{2} < \text{NP}_i[ga], \text{NP}_j[o] > \\
\text{SYN} \quad \boxed{3}[\text{CAT} \ \textit{verb}] \\
\text{SEM} \begin{bmatrix} \text{IND} \ s_1 \\ \text{FRAMES} \ \left\langle \boxed{4}\begin{bmatrix} \textit{breaking-fr} \\ \text{AGENT} \ i \\ \text{THEME} \ j \\ \text{SIT} \ s_1 \end{bmatrix}, \boxed{5}\begin{bmatrix} \textit{state-change-fr} \\ \text{CAUSE} \ s_1 \\ \text{THEME} \ j \end{bmatrix}\right\rangle \end{bmatrix}
\end{bmatrix}\right\rangle
\end{bmatrix}
$$

The construct in (9) is licensed by the Resultative Construction in (10). Although in (9), the index *j* identifies the (syntactic) object NP$_j$ with the semantic subject of resultative phrase, giving rise to a typical object-oriented resultative phrase exemplified in (1), the lexeme for *nut-* 'paint' in (5), for example, will specify the index of the dative NP as the THEME argument of a *state-change-fr* of the verb. That is, lexical semantics of individual verbs specifies the argument(s) that undergoes a change of state as a result of an event, and the Resultative Construction (10) ensures that the specified argument(s) plays the role of semantic subject of resultative phrases.

(10) the Resultative Construction

resultative-cxt $\Rightarrow$

$$
\begin{bmatrix}
\text{MTR} & \begin{bmatrix}
\textit{derived-v-lxm} \\
\text{FORM} \ < \text{X} > \\
\text{ARG-ST} \quad \text{L}_1 \oplus \left\langle \text{AP}\begin{bmatrix} \text{SYN|VAL} & <\text{NP}_i> \\ \text{SEM} & [\text{IND} \ s_2] \end{bmatrix}\right\rangle \\
\text{SYN} \ \text{Y} \\
\text{SEM} \begin{bmatrix} \text{IND} \ s_1 \\ \text{FRAMES} \ \text{L}_2 \oplus < \text{Z:}[\text{RESULT} \ s_2] > \oplus \text{L}_3 \end{bmatrix}
\end{bmatrix} \\[2em]
\text{DTRS} \left\langle \begin{bmatrix}
\textit{v-lxm} \\
\text{FORM} \ < \text{X} > \\
\text{ARG-ST} \ \text{L}_1 \\
\text{SYN} \ \text{Y} \\
\text{SEM} \begin{bmatrix} \text{IND} \ s_1 \\ \text{FRAMES} \ \text{L}_2 \oplus < \text{Z:}\begin{bmatrix} \textit{state-change-fr} \\ \text{CAUSE} \ s_1 \\ \text{THEME} \ i \end{bmatrix} > \oplus \text{L}_3 \end{bmatrix}
\end{bmatrix}\right\rangle
\end{bmatrix}
$$

5. Conclusion

The present paper gives a constructional analysis of the Japanese resultative construction and claims that, although the construction is conventionalized to some extent as is the case with the English counterpart, entities which undergo a change of state in the event described by verbs can be the

semantic subjects, including those not explicitly expressed in a sentence. Such entities are determined not by the syntactic function or the formal semantic role of expressions referring to them, but by the lexical semantics of verbs.

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