Resultatives at the Crossroads between the Lexicon and Syntax

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1 Introduction

The sentences in (1) are examples of transitive resultative constructions which are composed of the following elements: an agent NP, an activity-denoting verb, a postverbal patient NP, and a resultative phrase which expresses the change of state or location of the patient as a result of the event expressed by the matrix verb.

(1) a. Claire painted the door red.   c. Chris drank Martin under the table.
     b. Pat ran his Nikes threadbare.   d. Nicole danced Sascha tired.

Resultative constructions have received much attention over the last decade because their syntactic and semantic distribution constitutes a challenge to theories within the Principles and Parameters framework (henceforth: P & P), such as the Small Clause Theory or the Binary Branching Analysis. There has, by no means, been any consensus as to whether the semantic predication relation that holds between the postverbal NP and the resultative phrase should be encoded syntactically, or not.

  This paper has two main goals. In the first part, I want to challenge the assumption that purely syntactic analyses are indeed the best way to account for the distribution of resultative constructions. The discussion focuses on the theory-internal syntactic motivations that underlie the individual analyses of resultative constructions within the P & P framework. In the second part, I will discuss a lexicalist approach to resultatives in terms of complex predicates. I will propose three different kinds of lexical rules, each forming a complex predicate in a different way.

2 Syntactic analyses of resultatives

2.1 Resultatives as Small Clauses

Within the P & P framework, adherents of the Small Clause Analysis propose that the postverbal NP and the resultative phrase form a syntactic constituent, namely a Small Clause (henceforth: SC). Following Stowell (1981), Hoekstra (1988) and Aarts (1992) argue that there exists a semantic predication relation between the resultative predicate and the postverbal NP that parallels that of a subject and a predicate in full clauses. Thus, the resultative phrase *red* in (2a) theta-marks the postverbal NP *the door*.

(2) a. Claire painted [$_{SC}$ [$_{NP}$ the door] [$_{AP}$ red]]
    b. Pat ran [$_{SC}$ [$_{NP}$ his Nikes] [$_{AP}$ threadbare]].
    c. Chris drank [$_{SC}$ [$_{NP}$ Martin] [$_{PP}$ under the table]].

Although proponents of the SC Theory concentrate on providing syntactic evidence in favor of a SC Analysis of resultative constructions, they are not concerned about the semantic distribution of the postverbal NP (the SC subject), or the resultative phrase (the SC predicate).

(3) a. Claire painted the door {red/?old/*visible/*broken}.
    b. Pat ran his Nikes {threadbare/?blue/*new/*small}.
    c. Chris drank {Martin/?himself/*his Martini/*the glass} under the table.
    d. Nicole danced {Sascha/herself/?her cat/*her goldfish} tired.

The data in (3) illustrate that semantically strange or uninterpretable resultative phrases and postverbal NPs block a full interpretation of resultatives. Note that on the SC Analysis of resultatives, there are no principled mechanisms that guarantee a proper semantic selection of the resultative phrase (cf. (3a) and (3b)) and thus a straightforward interpretability of the resultative construction. These shortcomings are due to a number of theory-internal assumptions of the SC Analysis.

  The first problem has to do with the status of the SC subject. Chomsky's (1981) Theta Criterion allows each argument to receive only one theta role. Since the resultative predicate already assigns a theta-role to the postverbal NP, any theta marking by the matrix verb is blocked for this reason. Thus, the matrix verb cannot restrict the semantic range of the postverbal NP. In this connection, Hoekstra observes that in sentences such as (2b) and (2c) there exists no "sensible semantic relationship" (1988: 116) between the postverbal NPs and the

matrix verbs. This would lead him to conclude that the postverbal NPs in (2b) and (2c) are not arguments of the matrix verb and that therefore all resultatives should be analyzed in terms of SCs.

In a similar fashion, the SC Analysis has no principled way of restricting the semantic range of the resultative phrase in (3a)-(3d). This shortcoming is due to yet another assumption of the P & P framework, namely the Projection Principle (Chomsky 1981: 29), which requires that the selection requirements of particular lexical items must be met at all levels of representation. Based on the Projection Principle, Aarts (1992:22) points out that a verb "always shows the same subcategorization properties" which leads him to propose that "in sentences containing SCs, the matrix verb s-selects a proposition (namely, the SC)" (1992: 23). For Aarts, "this must be so because this verb assigns a Θ-role either to a single NP argument (...) or to a propositional (clausal) argument (...) but never to two arguments." (1992: 22) According to this view, the entire SC constituent receives a propositional theta-role from the matrix verb instead of the two postverbal constituents receiving individual theta-roles. Note, however, that the propositional theta-role merely serves as a formal diacritic instead of a semantic selection mechanism that has access to the lexical semantics of the constituents of the SC. Thus, it cannot distinguish between different kinds of semantic categories and only marks the SC with a "propositional theta-role" that is inadequate to restrict the semantic range of the resultative phrases in (3a)-(3d). Both Hoekstra (1988) and Aarts (1992) fail to explicitly address the issue of how and why certain resultative phrases are allowed in resultative constructions while others are not.

Finally, questions remain about the status of the matrix verbs in (3b)-(3d). Note that although this sense of *run* is lexically intransitive, it is followed by *her Nikes* as its postverbal NP in (3b). If the Projection Principle indeed holds at all levels of representation, then it is not clear why a lexically intransitive verb occurs with a postverbal NP which is the affected object of *run* (cf. *The Nikes were run threadbare by Pat*). Similarly, Hoekstra's (1988: 118) proposal to detransitivize transitive verbs like *drink* in (3c) to allow for postverbal NPs that do not match the lexical semantic selection restrictions of the matrix verb lacks any empirical motivation. It is thus not clear how *Martin* can appear as the postverbal NP to *drink* in (3c). This observation calls into question how the selection restrictions of lexically transitive verbs like *drink* are altered in the course of the syntactic derivation in order to accommodate resultative constructions as in (3c).

Our brief discussion of the SC Analysis has shown that it cannot account for the semantic selection restrictions that hold for the postverbal constituents of resultatives. In addition, it fails to account for the differences in

subcategorization restrictions of lexically intransitive and transitive verbs in resultative constructions. Similar weaknesses are inherent in other analyses of resultatives in terms of SCs, such as Staudinger's (1997) hybrid SC analysis of resultatives or Bowers' (1997) minimalist account. At this point, it is clear that the proposal to analyze resultatives in terms of SCs is untenable on the basis of the data in (3). We now turn to a different account within the P & P framework, namely the Ternary Branching Analysis.

2.2 Resultatives as ternary branching structures

Based on data on semantic selection restrictions, Carrier & Randall ("C & R") (1992) propose that postverbal NPs as in (4a) do indeed function as the internal argument of the verb and suggest that resultatives should be analyzed in terms of ternary branching structures (1992: 187). C & R adopt a weakened version of the Theta Criterion that allows the postverbal NP to receive two theta-roles.

(4) a. Claire[$_{VP}$ painted [$_{NP}$ the door] [$_{AP}$ red]]
     b. Pat [$_{VP}$ ran [$_{NP}$ his Nikes] [$_{AP}$ threadbare]].
     c. Chris [$_{VP}$ drank [$_{NP}$ Martin] [$_{PP}$ under the table]].

The authors distinguish between so-called transitive resultatives (*painted the door red*) in which the postverbal NP receives a theta-role both from the verb and the resultative phrase, and intransitive resultatives (*ran his Nikes threadbare*) in which the postverbal NP receives only one theta-role, namely from the resultative phrase. This kind of analysis, however, has three serious shortcomings. First of all, C &R (1992: 182) claim that obligatory transitive verbs exhibit the same semantic restrictions in resultative constructions as they do in non-resultative sentences. Clearly, this is not always the case as the following sentences illustrate.

(5) a. Melissa drank the teapot empty.   c. Ed fried the pan black.
     b. Dave washed the soap out of his eyes.

The sentences in (5) show that in resultative constructions some lexically transitive verbs can exhibit different selection restrictions with respect to their postverbal NPs. Thus, one typically does not *drink a teapot*, *wash a soap*, or *fry a pan*. C & R's account does not account for these data.
  Second, C & R's claim that the postverbal NPs of intransitive verbs in resultatives are not arguments of the verb is problematic. Assuming with Sag & Wasow (1999: 235) that the passive "turns the first NP complement into the

subject", postverbal NPs of resultatives containing lexically intransitive verbs exhibit the behavior of arguments under passivization (*The Nikes were run threadbare*). This, however, is not expected under C & R's analysis.

Finally, consider our data concerning the semantic selection of the postverbal NPs and the resultative phrases in (3) above. Although C & R propose that the two postverbal constituents are theta-marked by the matrix verb, they do not explicitly address the issue of how to restrict the semantic range of the postverbal NP and the resultative phrase. Thus, their approach faces the same shortcomings as the SC analysis when it comes to an explanation of the semantic selection restrictions that hold for the two postverbal constituents. In what follows, I will propose a lexicalist analysis of resultatives in terms of complex predicates.

3 Towards a lexical treatment of resultatives

The discussion of the syntactic approaches towards resultative constructions in the preceding sections has pointed to several factors which need to be taken into account in an adequate model of these constructions: the semantic selection restrictions with respect to the postverbal NP and the resultative phrase, the treatment of lexically intransitive verbs that occur with an object NP, the analysis of transitive verbs with non-subcategorized object NPs, and the syntactic licensing of the resultative phrase. As I have pointed out, neither the SC Analysis nor the Ternary Branching Analysis provide a satisfactory treatment of these points.

3.1 Syntactic derivations without lexical semantics?

I would like to suggest that these problems are due to three shortcomings inherent to the framework underlying both approaches. First, the Projection Principle requires that the selection requirements of particular lexical items must be met in the same categorial form at different levels of representation. It does therefore not allow for any change of the subcategorization frame of the matrix verb during the course of the syntactic derivation. Thus, the assumption of the Projection Principle makes it impossible to deal adequately with the occurrence of object NPs following intransitive verbs in resultative constructions.

Second, both the SC Analysis and the Ternary Branching Analysis fail to recognize the importance of the meanings associated with the constituents of the resultative construction. This is due to the emphasis placed on the syntactic component within the P & P framework. According to this theory, semantic

selection restrictions are expressed in terms of loosely defined theta-roles that do not provide any detailed semantic description of the arguments of a verb, but rather function as mere diacritics. Any theory that neglects the fine-grained semantic distinctions between different potential arguments of a verb cannot effectively predict the semantic selection restrictions that hold for the postverbal constituents in resultative constructions.

 Finally, given the tendency within the P & P framework to describe disparate construction types in the same structural terms, both the SC Analysis and the Ternary Branching Analysis analyze all of the resultative constructions in (1) as either SCs or as ternary branching structures. Note, however, that both syntactic approaches miss important meaning differences between the constructions in (1). Although all of the resultatives in (1) share a common syntactic surface structure (cf. (6)) as well as a common core meaning (cf. (7)), there is an important difference between the meanings of the individual constructions.

(6) Res. Construction   (7) Core meaning of Resultative Construction

   NP_X V NP_Y $ResP_R$ X V-ed and X's V-ing caused that Y became R

Boas (to appear) observes that there are at least two different kinds of verbs that can occur in transitive resultative constructions, namely lexically intransitive verbs such as *run* and *dance* and lexically transitive verbs such as *paint*. The crucial difference between the two verb classes is that the resultative construction has different meanings depending on the transitivity of the matrix verb. Boas (to appear) proposes that the meaning of resultative constructions containing an intransitive verb as in (8a) can be paraphrased as in (8b). In contrast, the meaning of a resultative construction containing a transitive verb as in (9a) can be paraphrased as in (9b):

(8) a. Pat ran his Nikes threadbare.   (9) a. Claire painted the door red.
   b. X V-ed and X's V-ing caused   b. X V-ed Y and X's V-ing
      that Y became R.   caused that Y became R.

According to this analysis, the difference between the transitive and the intransitive verb is that the semantic relationship between the matrix verb and the postverbal NP is closer in (9) than it is in (8). This difference in meaning is captured by the first part of the paraphrases. Whereas in the transitive case (9b), the *X directly affects* Z by performing some action of which Y is the direct undergoer (X V-ed Y), this is not the case with resultatives containing intransitive verbs. These sentences do not exhibit such a close relationship between the matrix verb and the postverbal NP, as indicated by the paraphrase

(9b). In this case, X performs some activity (X V-ed), and by performing that activity Z gets somehow affected. This means that Z, the postverbal NP, is only *indirectly affected* by the activity.

Let us finally turn to a set of data which contain verbs that I want to dub "weird" transitive verbs. These are lexically transitive verbs whose subcategorization frames are different when they occur in resultative constructions. The data in (10) illustrate the different selection restrictions of "weird transitives" in their lexically specified interpretation (10 d, e) vs. their resultative interpretation (10 a-c).

(10)   Weird transitive resultatives
        a. *Jack drank Bob.   d. Jack drank his water.
        b. *Jack drank Bob empty.   e. Jack drank his water empty.
        c. Jack drank Bob under the table.

(10e) is a case of a regular transitive resultative. (10a), however, is a case of a semantically strange postverbal NP following *drink*. Typically, one does not drink people, but liquids. In the context of a resultative construction, however, *Bob* can be interpreted as the undergoer of the matrix verb. I would like to suggest that the change in selection restriction is due to the presence of the resultative phrase *under the table*. On this view, the semantic requirements of the resultative construction make the semantics of the resultative phrase fuse with the semantics of the transitive verb in order to produce a "weird transitive."

Both the SC Analysis and the Ternary Branching Analysis, however, miss these important differences in meaning. Given their unified syntactic treatment of predication structures, they fail to account for the lexical semantics involved in the formation of the three types of resultatives described in the previous paragraphs. What is therefore needed is a balanced analysis that incorporates the interpretation differences as well as the differences in subcategorization between the individual verbs. Such an approach is presented in the following section.

3.2 Resultatives as Lexical Rules

Before discussing the mechanisms of my analysis in detail, let us take a brief look of the properties of the three resultative constructions we have identified in the previous sections. The table below provides an overview of the facts that we have to account for.

(11) Resultatives affecting the argument structure of different kinds of verbs

Type of matrix verb affected	Change in argument structure
(a) Transitive verb	• Add a resultative phrase
(b) Weird transitive verb	• Add a resultative phrase • Change semantic selection restrictions on patient argument
(c) Intransitive verb	• Add a resultative phrase • Add a patient argument

The lexicalist analysis I would like to suggest accounts for the distribution in (11) in terms of complex predicates that incorporate verbs and change their subcategorization frame and semantic selection restrictions. This process of predicate formation is sensitive to the lexical semantic information associated with the lexical daughter of the complex predicate. For each of the three verb classes, there is a different lexical rule that alters a verb's subcategorization frame to derive a complex resultative predicate.
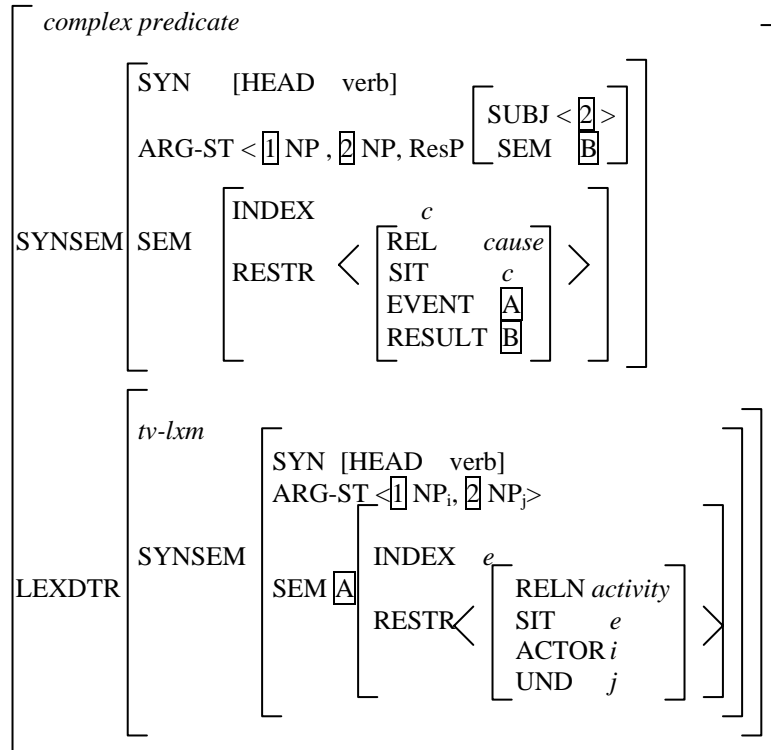
The first class of resultative predicates contains lexically transitive verbs like *paint* or *sweep*. The lexical rule deriving the transitive resultative predicate takes the transitive verb as its input and adds a resultative phrase to its subcategorization frame. This is illustrated in the structure of the complex predicate in (12) that consists of an HPSG-style attribute-value matrix (see Sag & Wasow 1999). The transitive resultative predicate in (12) has the structure of a complex predicate and consists of two parts. It contains the syntactic and semantic properties of the complex predicate (SYNSEM) and its lexical daughter (LEXDTR), which is a lexical entry by itself. In this analysis, predicates like the transitive resultative predicate are derived predicates (cf. Ackerman & Webelhuth 1998) as can be seen by the presence of the lexical daughter in (12). The complex predicate has access to the feature structure of its lexical daughter in the lexicon and fuses it with the resultative phrase. When this complex predicate interacts with the syntax, only its SYNSEM attribute will be visible.

Let us begin by looking at the SYNSEM of the lexical daughter (a transitive verb) which consists of three attributes, namely syntax (SYN), argument structure (ARG-ST), and semantics (SEM). SYN indicates that the syntactic properties of the predicate are that of a verb. We see that the argument structure list in (12) contains the subject NP and the postverbal NP. The boxed numbers on the two NPs are used to indicate identity of information, i.e., information that is present in the structure only once but describes two different attributes. For

example, the boxed '1' attached to the first NP reappears on the first NP on the argument structure of the complex predicate to indicate that the two elements share the same information. The subscripts on the NPs of the lexical daughter's argument structure are used to identify them with their respective semantic roles in the semantics of the verb. The semantics (SEM) of the transitive verb consist of an index e which corresponds to the situation described by the verb, as well as restrictions (RESTR) on its semantic make-up. As we see, the transitive verb has to contain an activity component, an ACTOR role, and an UNDERGOER role.

(12) Transitive Resultative Predicate

$$
\begin{bmatrix}
\textit{complex predicate} \\
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \quad [\text{HEAD} \quad \text{verb}] \\
\text{ARG-ST} < \boxed{1}\,\text{NP}\,,\,\boxed{2}\,\text{NP},\,\text{ResP} \begin{bmatrix} \text{SUBJ} < \boxed{2} > \\ \text{SEM} \quad \boxed{B} \end{bmatrix} \\
\text{SEM} \begin{bmatrix}
\text{INDEX} \quad c \\
\text{RESTR} \quad \left\langle \begin{bmatrix} \text{REL} & \textit{cause} \\ \text{SIT} & c \\ \text{EVENT} & \boxed{A} \\ \text{RESULT} & \boxed{B} \end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix} \\
\text{LEXDTR} \begin{bmatrix}
\textit{tv-lxm} \\
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \; [\text{HEAD} \quad \text{verb}] \\
\text{ARG-ST} < \boxed{1}\,\text{NP}_i,\,\boxed{2}\,\text{NP}_j> \\
\text{SEM} \; \boxed{A} \begin{bmatrix}
\text{INDEX} \quad e \\
\text{RESTR} \left\langle \begin{bmatrix} \text{RELN} & \textit{activity} \\ \text{SIT} & e \\ \text{ACTOR} & i \\ \text{UND} & j \end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Let us now turn to the SYNSEM of the complex predicate. Its argument structure contains the NPs of the transitive verb, as is indicated by the boxed numbers. In addition, it contains the Res(ultative) P(hrase) (either an AP, PP, or NP) whose occurrence is motivated by the semantics of the complex predicate. This is illustrated by the information in brackets that follows the ResP. The

bracketed information following the ResP represents both syntactic and semantic information. The boxed '2' indicates that the second NP (the UNDERGOER) is the subject of the ResP.

The boxed 'B' representing the semantics of the ResP accomplishes two things. First, it motivates the occurrence of the ResP on the ARG-ST of the complex predicate. That is, if we look at the semantic restriction of the complex predicate we see that it requires two events to be in a *cause* relation. The semantics 'A' of the first event is that of the lexical daughter. The semantics 'B' of the second event has to denote a result state. It is the *cause* semantics of the complex predicate that requires the presence of an element denoting a result state. Thus, the occurrence of the ResP on the ARG-ST of the complex predicate is a syntactic reflex of the *cause* semantics of the complex predicate. This is shown by the boxed 'B' notation present in both the semantics of the *cause* relation as well as following the ResP.
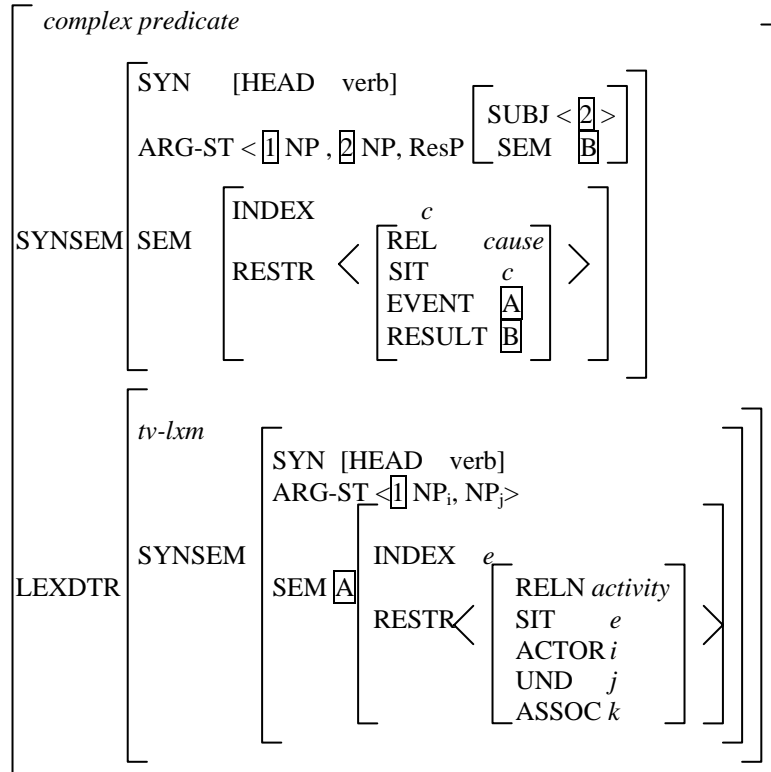
Second, the semantics 'B' of the ResP is a crucial factor in determining whether it can occur in the transitive resultative predicate. The *cause* relation achieves the result that the semantics of the resultative phrase have to be compatible with the semantics of the causing event 'A.' That is, although the result phrase might denote a possible state of the NP it predicates over (*the house (is) wooden*), that state might not be an acceptable result state of the activity of the causing event (**paint the house wooden*). In other words, the *cause* semantics of the complex predicate has access to all of the lexical semantic information associated with both the causing event and the result event. On the basis of this information, the *cause* semantics decides whether the two lexical semantic structures are compatible. As a result, the transitive resultative predicate only allows resultative phrases that are compatible with both the UNDERGOER argument, and the activity denoted by the matrix verb.

In (12) we have postulated a property that all three types of resultatives share: resultative predicates are derived from a verb whose argument structure is changed by the addition of a resultative phrase. But we have only discussed the structure of transitive resultative predicates. In the next sections, I will show how the structures of the two other resultative predicates differ from the transitive resultative predicate.

Let us next turn to what I have dubbed "weird" transitive resultative predicates. Recall that these verbs show different semantic selection restrictions when they occur in resultatives. (13) represents the structure of weird transitive resultatives. (13) exhibits the same general architecture as our regular transitive resultative predicate in (12) above, with two important differences. First, compare the argument structure of the complex predicate with the argument structure of its lexical daughter. Although the argument structure of the complex predicate

contains two NPs, only its first NP is coindexed with the ACTOR NP of the lexical daughter. Instead of incorporating the UNDERGOER NP of the transitive verb, the complex predicate contains a different UNDERGOER NP. The occurrence of this NP is licensed by the presence of the resultative phrase which takes the NP as its subject. In other words, the *cause* semantics of the complex predicate - which also licenses the ResP – licenses the second NP on its argument structure.

(13) Weird Transitive Resultative Predicate

$$
\begin{bmatrix}
\textit{complex predicate} \\
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \quad [\text{HEAD} \quad \text{verb}] \\
\text{ARG-ST} < \boxed{1} \text{NP} , \boxed{2} \text{NP, ResP} \begin{bmatrix} \text{SUBJ} < \boxed{2} > \\ \text{SEM} \quad \boxed{B} \end{bmatrix} \\
\text{SEM} \begin{bmatrix} \text{INDEX} \qquad c \\ \text{RESTR} \quad \left\langle \begin{bmatrix} \text{REL} \quad \textit{cause} \\ \text{SIT} \quad c \\ \text{EVENT} \quad \boxed{A} \\ \text{RESULT} \quad \boxed{B} \end{bmatrix} \right\rangle \end{bmatrix}
\end{bmatrix} \\
\text{LEXDTR} \begin{bmatrix}
\textit{tv-lxm} \\
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \quad [\text{HEAD} \quad \text{verb}] \\
\text{ARG-ST} < \boxed{1} \text{NP}_i, \text{NP}_j > \\
\text{SEM} \boxed{A} \begin{bmatrix} \text{INDEX} \quad e \\ \text{RESTR} \left\langle \begin{bmatrix} \text{RELN} \ \textit{activity} \\ \text{SIT} \qquad e \\ \text{ACTOR} \ i \\ \text{UND} \qquad j \\ \text{ASSOC} \ k \end{bmatrix} \right\rangle \end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

The second difference between the transitive and the weird transitive lies in the amount of lexical semantic information necessary to drive the formation of the complex predicate. Thus, the semantics of the lexical daughter in (13) contains additional information that is necessary for the licensing of the second NP (UNDERGOER) on the argument structure of the complex predicate. For lack of
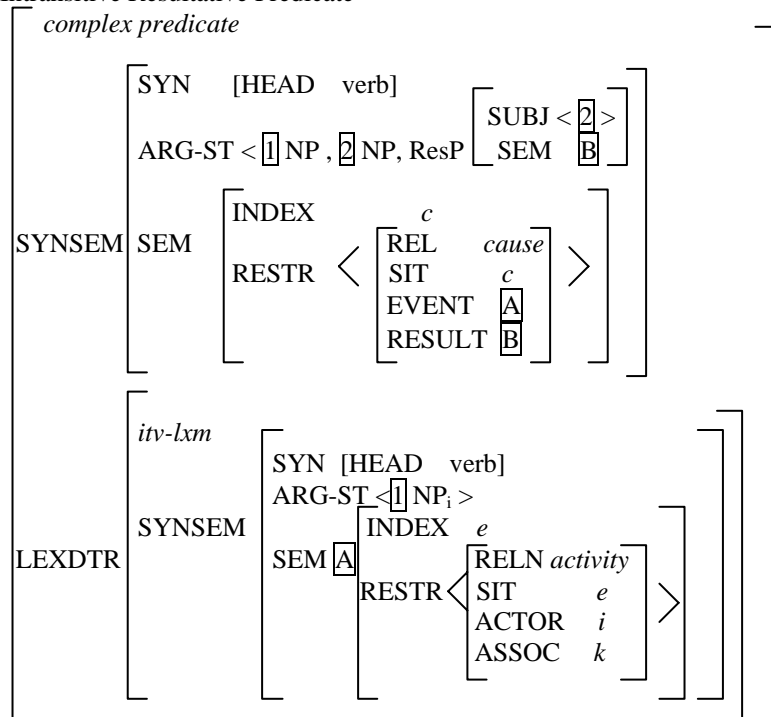
space, I will call this additional information "associate" (ASSOC) information. ASSOC contains semantic information in the style of Frame Semantics (Fillmore 1982, Baker 1999), an approach to the understanding and description of the meanings of lexical items in grammatical constructions. Proponents of this theory claim that in order to understand the meanings of the words in a language we must first have knowledge of the conceptual structures, or semantic frames, that underlie the meaning of words. Semantic frames contain frame elements, i.e., descriptions of the meanings of the frame's participants in terms of situational roles. A given verb cannot only invoke one frame, but also multiple frames.

  I suggest that the formation of weird transitive resultatives crucially depends on the inclusion of lexical semantic information in the form of Frame Semantics. That is, in order to derive weird transitive resultatives such as *Pat ate his plate empty* we must have access to the frame semantic knowledge associated with the matrix verb *eat*. This information will tell us that eating does not only involve putting food into one's mouth, but that in a prototypical eating situation, the food is taken off a plate before being put into one's mouth. In other words, in this case *eat* does not invoke a frame describing food consumption, but rather a frame of emptying a container. I propose that the rich frame semantic information associated with a lexical item in the form of associate information in (13) is crucial in determining whether a resultative predicate can change the semantic selection restrictions of a transitive verb when forming a complex predicate. As a result of incorporating frame semantic information, the *cause* semantics of the complex predicate can check whether the semantics of the resultative phrase is compatible with both the semantics of the matrix verb and the undergoer argument of the complex predicate.

  Finally, let us turn to the structure of intransitive resultative predicates in (14)[3]. They exhibit the same general architecture as the two other complex predicates, except for two differences. As (14) shows, intransitive resultative predicates take only intransitive verbs as their input. Since intransitives only provide an ACTOR NP for the argument structure of the complex predicate, intransitive resultative predicates provide both an UNDERGOER NP and a resultative phrase. As in (13) above, the ResP which is licensed by the *cause* semantics of the predicate licenses the occurrence of the UNDERGOER because it requires a NP as its subject. What kind of UNDERGOER is licensed depends on the frame semantic information associated with the intransitive lexical daughter as well as on the semantic compatibility between the ResP, the UNDERGOER, and the matrix verb. Thus*, Pat ran his Nikes threadbare* is licensed since one of the general frames inherited by *run* tells us that running can be done in shoes which can undergo some change of state as the result of running. Moreover, shoes have

the property of becoming threadbare after a lot of running. With the semantic compatibility checked by the cause semantics of the resultative predicate, *Nikes* is licensed as the UNDERGOER argument of *run-threadbare*.
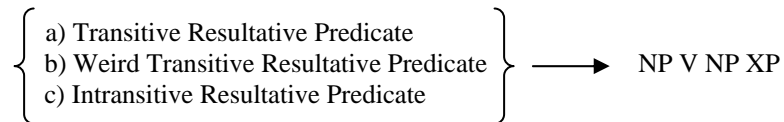
(14) Intransitive Resultative Predicate

$$
\begin{bmatrix}
\textit{complex predicate} \\[4pt]
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \quad [\text{HEAD} \quad \text{verb}] \\[4pt]
\text{ARG-ST} < \boxed{1}\,\text{NP}\,, \boxed{2}\,\text{NP}, \text{ResP} \begin{bmatrix} \text{SUBJ} < \boxed{2} > \\ \text{SEM} \quad \boxed{B} \end{bmatrix} \\[8pt]
\text{SEM} \begin{bmatrix}
\text{INDEX} \qquad\quad c \\
\text{RESTR} \quad \Big\langle \begin{bmatrix} \text{REL} & \textit{cause} \\ \text{SIT} & c \\ \text{EVENT} & \boxed{A} \\ \text{RESULT} & \boxed{B} \end{bmatrix} \Big\rangle
\end{bmatrix}
\end{bmatrix} \\[30pt]
\text{LEXDTR} \begin{bmatrix}
\textit{itv-lxm} \\[4pt]
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \; [\text{HEAD} \quad \text{verb}] \\
\text{ARG-ST} < \boxed{1}\,\text{NP}_i > \\[4pt]
\text{SEM} \;\boxed{A} \begin{bmatrix}
\text{INDEX} \quad e \\
\text{RESTR} \Big\langle \begin{bmatrix} \text{RELN} & \textit{activity} \\ \text{SIT} & e \\ \text{ACTOR} & i \\ \text{ASSOC} & k \end{bmatrix} \Big\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

4   Conclusion

In this paper, I have shown that there is semantic as well as syntactic evidence against an analysis of resultative constructions in terms of SC Theory (Hoekstra 1988, Aarts 1992) or the Ternary Branching Analysis (Carrier & Randall 1992). I have argued that the shortcomings of both approaches are due to the architecture of the P & P framework which places emphasis on the analysis of syntactic structures while systematically avoiding any detailed discussion of the influences of semantic information on syntactic derivations. More specifically,

both accounts fail to address the fact that all transitive resultative constructions exhibit the same syntactic pattern but differ in their meanings.

  The alternative theory that I am proposing in this paper does not suffer from these flaws. As the following diagram illustrates, my analysis distinguishes between three classes of complex resultative predicates that all derive the same syntactic surface pattern, but in different ways.

(15) Different types of complex predicates deriving the same surface pattern

$$\left\{ \begin{array}{l} \text{a) Transitive Resultative Predicate} \\ \text{b) Weird Transitive Resultative Predicate} \\ \text{c) Intransitive Resultative Predicate} \end{array} \right\} \longrightarrow \quad \text{NP V NP XP}$$

The crucial difference between the three types of complex predicates lies in the type of verb class they incorporate in the resultative construction. Thus, my analysis distinguishes between three classes of complex resultative predicates that all derive the same syntactic surface pattern by restructuring the argument structure of the matrix verb in the lexicon, but in different ways. The predicate representations of the individual resultative predicates capture all the properties of the respective resultative constructions listed in (11) above: (a) the transitive resultative (12) adds a resultative phrase to the argument structure of the matrix verb; (b) the weird transitive (13) adds a resultative phrase and changes the semantic selection restrictions with respect to the undergoer argument; (c) the intransitive resultative (14) adds both a resultative phrase and an undergoer argument.

  In section 3.2 we have also seen that the formation of resultative predicates is constrained by the lexical semantics associated with the matrix verb, the postverbal NP, and the resultative phrase. I have argued that a semantic representation in terms of Frame Semantics (Fillmore 1982, Baker 1999) is necessary to distinguish between multiple scenes and their related senses in order to motivate the licensing of non-subcategorized undergoer arguments.

  Based on Ackerman & Webelhuth's (1998) Theory of Predicates, I have suggested that resultative predicates enter the syntactic derivation as predicates with fully specified argument structures. On this view, syntax fills the predicate's open argument slots to yield a complete resultative sentence. Although the ideas sketched here are preliminary, I hope that they can serve as a basis for forthcoming research that will lead to the development and integration of a more complete theory of the lexical semantics underlying the formation of complex predicates in the lexicon[4].

Notes

[2]For an extensive review and critique of Theta Theory, see Rauh (1988).

[3]Wechsler's (1997) account of resultatives differs from my analysis in various points. First, Wechsler assumes only two kinds of resultatives (control and ECM). Second, Wechsler interprets the meaning of the resultative as a BECOME relation which mediates between two different states (change of state). Third, Wechsler's approach does not provide any mechanism to include the broad range of lexical semantic information into the resultative. Finally, Wechsler's analysis does not deal with what I call weird transitive resultatives.

[4]In my discussion of resultatives I have left out any discussion of Construction Grammar analyses of resultatives (Fillmore & Kay 1993, Goldberg 1995). While these accounts are similar in spirit to the analysis proposed in this paper, they do not make any fine grained distinctions between three different classes of resultatives.

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