RESULTATIVES

Jane Simpson

This paper[1] looks at certain syntactic and semantic conditions on
a class of constructions which Halliday (1967) has called RESULTATIVE
ATTRIBUTES. A resultative attribute describes the STATE of an argument
resulting from the action denoted by the verb. Thus, in (1) *I painted
the car yellow*, the adjective *yellow* describes the colour of the car as
a result of the action of painting it.

(1) I painted the car *yellow*.

(2) I painted the car *a pale shade of yellow*.

(3) I cooked the meat *to a cinder*.

(4) The boxer knocked John *out*.

The resultative attribute may be an adjective (1), a nominal (2),
a transitive prepositional phrase (3), or an intransitive preposition
(4).[2] I claim, as do Dowty (1979) and Randall (1983), that the
matrix verb and the resultative attribute form a complex verb. I argue
that such complex verbs are formed by a general lexical rule which adds
a resultative complement. I will show how this lexical rule can be re-
presented within a modified version of the Lexical-Functional Grammar
framework (LFG) which allows initial grammatical functions (in particu-
lar, underlying OBJECTs).

The paradigm classes of verbs that take RESULTATIVE ATTRIBUTES are
verbs of CONTACT and verbs denoting some CHANGE OF STATE. Verbs of con-
tact appear only to be transitive. They are illustrated in (5).

(5) a. I shot John *dead*.

   b. I shot/kicked/punched/beat John *to death*.

In contrast, change of state verbs can be transitive or intransitive.
The (a) sentences of (6), (7) and (8) show transitive change of state
verbs. The (b) sentences show their intransitive counterparts.

(6) a. I froze the icecream *solid*.

   b. The icecream froze *solid*.

(7) a. I melted the butter *to a liquid*.

   b. The butter melted *to a liquid*.

(8) a. I broke the vase *into pieces.*

     b. The vase broke *into little pieces.*

(9) and (10) show that an intransitive change of state verb with a resultative attribute does not have to have a transitive counterpart.

     (9) a. He flushed/blushed *red.*

          b. *I flushed him *red.*

     (10) a. He grew *old.*

          b. *I grew the tree *old.*

In the transitive sentences, the resultative attribute is always predicated of the OBJECT, while in the intransitive sentence it is predicated of the SUBJECT. Observe that, if the transitive sentences are passivized, the resultative is predicated of the new SUBJECT, as (11) and (12) show.

     (11) The car was painted *red.*

     (12) The icecream was frozen *solid.*

That is, the resultative attribute is predicated of the same argument in the active and passive.

     In LFG, it is assumed that passive is a lexical rule which operates on the predicate argument structures of verbs, and converts OBJECTS into SUBJECTS (see Bresnan (1982b)). So, the controller of the resultative attributes in (11) and (12) is underlyingly an OBJECT.

     Let us now examine the intransitive change of state verbs. Observe that they correspond semantically to a class of intransitive verbs which behave syntactically as though their surface SUBJECT were underlyingly an OBJECT. That is, intransitive CHANGE OF STATE verbs usually belong to the Unaccusative class of verbs, whose properties have been discussed by Perlmutter (1980) and Rosen (1981).[3]

     The generalization so far is that resultative attributes are predicated of OBJECTS, whether surface OBJECTS, or underlying OBJECTS. Let us now consider transitive sentences. A resultative attribute cannot be

predicated of the SUBJECT of a transitive clause, as (13) and (14) show.

(13) *I melted the steel *hot*.

    (This cannot mean: *I melted the steel until I was hot.*)

(14) *I ate the food *full/sick*.

    (This cannot mean: *I ate until I was sick.*)

This is a very important property of resultatives. No GENERAL SEMANTIC reason appears to block the resultative from being predicated of the SUBJECT, as the paraphrases with *until* etc. show.[4] This is a language-particular restriction.

Let us turn now to intransitive verbs. I have shown that intransitive verbs denoting CHANGE OF STATE can co-occur with RESULTATIVE ATTRIBUTES. There is another class of intransitive verbs, which Halliday calls PROCESS-ORIENTED intransitive verbs. These verbs focus on the process, or manner, rather than on the result, of an action. For instance, a process-oriented verb like *dance* describes the MANNER OF MOTION, rather than a CHANGE OF LOCATION. These verbs have been called Unergative by Perlmutter, because they often behave cross-linguistically as though their SUBJECTs were underlyingly SUBJECTs. That is, they have properties in common with the SUBJECTs of transitive verbs. They contrast with Unaccusative verbs, whose SUBJECTs have properties in common with the OBJECTs of transitive verbs. Since the SUBJECTs of transitive verbs cannot have resultative attributes predicated of them, we might expect that the SUBJECTs of Unergative verbs also cannot have resultative attributes predicated of them. This prediction is correct, as (15) shows:

(15) *I danced/laughed/jogged/walked/worked *tired*.

However, there is a way of predicating a resultant state of the SUBJECT of an Unergative verb. This is through the use of a reflexive construction to express the idea that, by performing some action to excess, the speaker did something to himself. I call this construction a FAKE REFLEXIVE. It is illustrated in (16) through (19).

(16) I laughed myself *sick*.

(17) I danced myself *tired*.

(18) I cried/sobbed myself *to sleep*.

(19) I shouted/screamed/yelled/bellowed myself hoarse

(19)   I shouted/screamed/yelled/bellowed myself *hoarse*.

Because the OBJECT is a reflexive pronoun, a resultant state is indirectly predicated of the SUBJECT.

A small class of transitive verbs, those whose OBJECTS are not necessarily expressed, can also take fake reflexives, allowing resultative attributes to be predicated of their SUBJECTS, as (20) and (21) show.

(20)   a.   I ate all day.

b.   I ate myself *sick/to death*.

c.   *I ate him *sick/to death*.

(21)   a.   He drank all through the evening.

b.   He drank himself *into the grave/to death*.

c.   *He drank her *into the grave/to death*.

Less commonly, both the intransitive verbs and the set of transitive

verbs just described allow non-reflexive objects with resultatives.

(22)   I cried my eyes *blind/out*.

(23)   a.   I ate him *out of house and home*.

b.   She drank him *under the table*.

These objects do not bear the normal semantic relationship to the verbs *eat* and *drink*, that of THING EATEN or DRUNK. Instead they represent something which is affected by the intensity/excessiveness with which the subject performs the action. These constructions, and the fake reflexive + resultative constructions, focus on the EXTENT to which the action denoted by the verb is performed. In the fake reflexive constructions, the extent is expressed by stating the effect the action has on the SUBJECT; in the non-reflexive constructions, the extent is expressed by stating the effect the action has on something else (although the SUBJECT may be affected if the OBJECT is a body part: *I cried my eyes blind*).[5]

To conclude this section, I have shown that the following syntactic generalization appears to hold for resultatives in English.

The controller of a resultative attribute must be an OBJECT, whether that OBJECT is a surface OBJECT, as in transitive verbs, or an underlying OBJECT, as in passives and intransi-

tive verbs of the Unaccusative class, or whether the OBJECT is a fake reflexive, as in intransitive verbs of the Unergative class.

The controller cannot be the SUBJECT of a transitive sentence or of an UNERGATIVE intransitive verb, except indirectly, by means of a fake reflexive.

There are a number of language-particular semantic conditions on resultative attributes. I will discuss two.

First, the verb must necessarily affect the OBJECT, which is why verbs of contact and verbs of change of state appear so freely. Perception verbs do not in general affect the object of perception,[6] and so cannot appear with resultatives, even if an appropriate situation is set up. Consider the myth of Medusa, whose gaze turns people to stone. One cannot say:

(24) *Medusa saw the hero *stone/into stone*.

Similarly, consider the myth of Midas, who was afflicted with the power of turning anything he touched into gold. It is still inappropriate to say:

(25) *Midas touched the tree *gold/into gold*.

Another place where this necessary effect constraint operates is with verbs of contact. Most verbs of contact have two forms, one in which the OBJECT is an NP and is necessarily affected by the action, and one in which the OBJECT[7] is a PP with the preposition *at*, and is not necessarily affected by the action.

(26) a. I shot John.

b. I shot at John.

Only the former can appear with a resultative attribute:

(27) a. John was shot *dead*.

b. *John was shot at *dead*.

c. *John was shot *dead* at.

The second semantic restriction on resultatives concerns verbs denoting CHANGE OF LOCATION. Unaccusative verbs fall into two semantic classes: verbs denoting CHANGE OF STATE and verbs denoting CHANGE OF LOCATION. We have seen that

LOCATION. We have seen that verbs denoting change of state allow resultatives. But change of location verbs[8] do not allow resultative attributes, as the examples given below show.

(28) He emerged *bedraggled*.

> (This means: He is bedraggled WHEN he emerges, not as a result of emerging.)

(29) He fell (down) *dead*.

> (The fall does not cause his death; he is dead WHEN he falls.)

The semantic generalization seems to be:

If a verb attributes a change of location of some argument, it is not possible to have a secondary predicate attributing a change of state involving that same argument.

It extends to transitive verbs, as the unacceptability of (30) and (31) show.

(30) I sent John the vase *broken*.

> (This cannot mean that the vase was broken by the act of sending it.)

(31) *She carried John *giddy*.

> (This cannot mean that John became giddy as a result of being carried.)

Again, there is apparently no general semantic reason blocking the

resultative interpretation.[9]

To sum up, I have shown that resultative attributes in English are subject to the SYNTACTIC constraint that they must be controlled by an OBJECT, whether underlying or surface, and they are subject to at least two language-particular SEMANTIC constraints: that the action necessarily affect the argument which the resultative attribute is predicated of, and that the verb's meaning cannot involve an inherent change of location. I have also shown that the control relations do not change under passive.

In the LFG theory, the most likely place for the statement of such regular restrictions is in the lexicon, in the lexical entry of the

verb. If the resultative attribute is an argument of a verb, it is easy to represent restrictions depending on the meaning of an individual verb. If the resultative attribute is not an argument of a verb, but rather an attribute modifying some argument, it is hard to state the dependencies holding between the verb and the resultative attribute.[10] Let us look now at the possibilities for treating a resultative attribute as an argument of a verb.

Verbs are subcategorized for the FUNCTIONS of their arguments; these form part of their lexical entry. A verb such as *hammer* has the predicate-argument structure given in (32).

(32) *hammer*$_1$:   hammerer, thing hammered
        $\langle$SUBJECT   OBJECT $\rangle$

This is read as follows:

The verb '*hammer*$_1$' is a two-place predicate which is subcategorized for a SUBJECT and an OBJECT. The '*hammerer*' argument is linked to the SUBJECT, and the '*thing hammered*' is linked to the OBJECT.

Complements of EQUI and RAISING verbs, such as *to be a scholar* in (33) and (34), are assumed to have the function XCOMP:

(33) I persuaded John *to be a scholar.*

(34) I believe John *to be a scholar.*

The lexical entry for an EQUI verb such as persuade is given in (35).

(35) *persuade*   persuader,   person persuaded,   proposition
            $\langle$SUBJECT   OBJECT   XCOMP$\rangle$

            (control equation) XCOMP SUBJECT = Verb's OBJECT

This is read as follows:

'*Persuade*' is a three-place predicate, which is subcategorized for a SUBJECT, an OBJECT and an XCOMP. The SUBJECT is linked to the '*persuader*' argument, the OBJECT to the '*person persuaded*' argument, and the XCOMP to the '*proposition*'. The control equation states that the SUBJECT of the XCOMP is identical to the

OBJECT of the matrix.

I propose that transitive verbs with resultative attributes, such as *flat* in *I hammered the metal flat*, have lexical entries similar to that of *persuade*. The resultative attribute is treated as an XCOMP.

The lexical entry for $hammer_2$ (*hammer X flat*) is given in (36).

(36) $hammer_2$ hammerer, thing hammered, result
$\langle$ SUBJECT OBJECT XCOMP $\rangle$

(control equation) XCOMP SUBJECT = Verb's OBJECT

This is read as follows:

'$Hammer_2$' is a three-place predicate, which is subcategorized for a SUBJECT, an OBJECT and an XCOMP. The SUBJECT is linked to the '*hammerer*' argument, the OBJECT to the '*thing hammered*' argument, and the XCOMP to the '*resultant state*'. The control equation states that the SUBJECT of the XCOMP is identical to the OBJECT of the matrix.

I propose a general lexical rule relating the two-place predicate $hammer_1$ with the three-place predicate $hammer_2$ (*hammer flat*), by adding a resultative attribute XCOMP. This rule is given in (37).

(37) XCOMP Addition Rule

Add a resultative attribute XCOMP.

Add the control equation: XCOMP SUBJECT = Verb's OBJECT

When the XCOMP Addition rule is applied to a transitive verb such as *paint*, the XCOMP is predicated of the OBJECT. This is illustrated in (38).

(38) a. *paint* $\langle$ (SUBJ) (OBJ) $\rangle$ (underlying form)

b. $\langle$ (SUBJ) (OBJ) (XCOMP) $\rangle$ (addition of XCOMP)

XCOMP SUBJ = verb's OBJECT

The rule applies before PASSIVE. Passive changes all instances of

OBJECT to SUBJECT, including the instance of OBJECT appearing in the control equation. The lexical entry for the passivized form is as follows:

(39) $paint_{passive}$ $\langle$(SUBJ)   (XCOMP)$\rangle$ (addition of XCOMP)

thing painted   result

XCOMP SUBJECT = verb's SUBJECT

When the XCOMP addition rule is applied to an intransitive Unaccusative verb such as *blush*, the XCOMP is predicated of the single argument, which is an underlying OBJECT. Then a rule of OBJECT → SUBJECT, equivalent to the PASSIVE rule, causes both the underlying OBJECT and the OBJECT mentioned in the control equation to become SUBJECT. This is illustrated in (40).

(40) a. *blush* $\langle$ (OBJ) $\rangle$ (underlying form)

b. $\langle$ (OBJ) (XCOMP) $\rangle$ (addition of XCOMP)

XCOMP SUBJECT = verb's OBJECT

c. $\langle$ (SUBJ) (XCOMP) $\rangle$ (OBJECT → SUBJECT rule)

XCOMP SUBJECT = verb's SUBJECT

Observe that this account of resultative attributes crucially depends on being able to refer to UNDERLYING OBJECTs. The level of underlying grammatical functions is not as developed in LFG as it is, say, in Relational Grammar, or in the versions of Government-Binding developed in Burzio (1981) and Marantz (1981). However, I assume that it is possible to extend the theory in such a way as to allow rules such as the XCOMP addition rule.

An interesting property of the XCOMP addition rule is that it can be extended to fake reflexive constructions, on the assumption that these should be treated as Raising to Object constructions, like *believe*, in contrast to the Equi-type constructions just described. Intuitively, in a sentence such as *I believe John to be happy*, the object of belief is not *John*, but rather the proposition *John be happy*. This is expressed in the lexical entry of the verb *believe* by assuming that *believe* is a two-place predicate, one of whose arguments is a proposition. The lexical entry for the verb *believe* is given in (41).

(41) *believe*   believer,   proposition
$\langle$SUBJECT   XCOMP $\rangle$ OBJECT

(control equation)   XCOMP SUBJECT = Verb's OBJECT

This is read as follows:

'*Believe*' is a two-place predicate, which is subcategorized
for a SUBJECT and an XCOMP. The SUBJECT is linked to the
'*believer*' argument and the XCOMP to the '*proposition*'.
There is an OBJECT function not linked directly to an argu-
ment. The control equation states that the SUBJECT of the
XCOMP is identical to the OBJECT of the matrix verb.

No argument is linked directly to an OBJECT function in the lexical
entry, and so the control equation can only be satisfied by allowing
the nominal representing the SUBJECT of the XCOMP to have two functions:
that of SUBJECT of the XCOMP, and OBJECT of the matrix verb. (See Bres-
nan (1982a) for a fuller account of raising.) This is represented by
having the OBJECT appear OUTSIDE the angle brackets containing the list
of grammatical-function/argument linkings.

Sentences such as *I danced myself tired*, or *I cried my eyes blind*,
or *I ate John out of house and home*, seem semantically parallel to the
example with *believe*, in that what syntactically is the OBJECT of the
sentence acts semantically as the SUBJECT of the resultative attribute,
rather than as an argument of the matrix verb.[11] For instance, in *I
danced myself tired*, *myself* is not *danced*, nor in *I ate John out of
house and home* is *John eaten*. *I danced myself tired* means that I danced
to such an extent that I was tired.

Applying the XCOMP addition rule blindly to intransitive verbs with-
out underlying OBJECTS creates RAISING of the right type, as (42) shows.

(42) a. *dance* ⟨ (SUBJ) ⟩   (underlying form)

  b.   ⟨ (SUBJ) (XCOMP) ⟩ OBJECT   (addition of XCOMP)

         XCOMP SUBJECT = verb's OBJECT

However, allowing the rule to apply blindly would predict that any un-
ergative verb could appear with any resultative attribute and any object.
Examples such as *She drank him under the table* should be commonplace.
But they are not. Verbs in general are relatively restricted as to what
resultative attribute, and what object they can appear with. So, while
the rule does apply to such verbs, it is likely that most such verbs
will have to list as part of their lexical entry, what the FORM of the
resultative and the object will be. For instance, the lexical entry for
the verb *cry* might state that its XCOMP can be *out*, *red* or *blind*, and
that the OBJECT (that is, the SUBJECT of the XCOMP) must be reflexive.

What reason is there to assume that resultative attributes are
XCOMPs, other than that, by calling them XCOMPs, we make them part of
the lexical entry of a verb? Evidence comes from an important constraint
on the well-formedness of functional structures, the CONSISTENCY con-
straint (see Kaplan and Bresnan (1982)).

Consistency:

Every grammatical function and every functional feature must have a unique value.

For grammatical functions, this means that there cannot be, say, two SUBJECTs in a sentence, or, more controversially, two OBJECTs. Likewise, there can be only one XCOMP.

If these resultative attributes are really XCOMPs, then they should be in complementary distribution with XCOMPs created by other means, such as EQUI and RAISING.[12] This prediction seems to be borne out, on the whole.[13] Thus, (43) cannot mean that John is happy as a result of my promise.

(43) a. *I promised John *happy* to go there alone.

       b. *I promised John to go there alone *happy*.

Similarly, (44) cannot mean that I am exhausted as a result of trying to please John.

(44) a. *I tried *exhausted* to please John.

       b. *I tried to please John *exhausted*.

Even if the EQUI verb takes an object-controlled complement, as *persuade* and *ask* do, a resultative attribute cannot appear, as (45) and (46) show.

(45) a. *I persuaded John *happy* to go there alone.

       b. *I persuaded John to go there alone *happy*.

(46) a. *I asked John *upset* to go there alone.

       b. *I asked John to go there alone *upset*.

These sentences cannot mean that John is happy or upset as a result of my asking or persuasion.

In conclusion, I have shown that there are syntactic and semantic constraints on resultative attributes, and that resultatives can readily be expressed within the LFG theory as XCOMPs. A single lexical rule can be postulated to cover the main cases of resultative attributes, provided that the notion UNDERLYING OBJECT can be encompassed within LFG. Finally, if resultative attributes have the function XCOMP, then the CONSISTENCY constraint explains their distribution with respect to other XCOMPs.

FOOTNOTES

[1]The work presented here is part of a study of resultatives that Lori Levin and I are making. I wish to thank a number of people for helpful criticisms and discussions, in particular, Joan Bresnan, Dick Carter, Noam Chomsky, Ken Hale, Paul Kiparsky, Beth Levin, Joan Maling, Haj Ross, Barry Schein, Tim Stowell, Edwin Williams, and Annie Zaenen.

[2]Emonds (1972) gives arguments that the particle *out* is an intransitive preposition. Bolinger (1971) shows that intransitive prepositions such as *out* can be used as resultative attributes. It must be mentioned that adjectives are the category most commonly used as resultatives. Nominals are the least common: witness the contrast between:

  I shot John dead.

  *I shot John the/a corpse. (unacceptable except on a strange bene-
                              factive reading)

I assume that this has to do with semantic interpretation of categories: adjectives and prepositional phrases are readily interpretable as denoting STATES, but only a few nominals, such as *a pale shade of pink*, *the right length*, (which seem semantically close to adjectives) allow state readings. See Carlson (1977) and Stump (1981) for attempts to account for other differences between adjectives and nominals in terms of semantic interpretation.

[3]See Burzio (1981) and Marantz (1981) for treatments of the Unaccusative hypothesis within different versions of Government-Binding, and Baker (this volume) for a treatment within Lexical-Functional Grammar.

[4]In fact, in similar constructions in the Central Australian language Warlpiri, the resultative attribute can be predicated of a transitive SUBJECT.

  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.

See Simpson (1983).

[5]Burzio (1981) discusses a construction appearing mostly with unergative verbs which has much the same semantic effect, the EXPLETIVE object construction:

I ran the shit out of those shoes.

They fished the hell out of that lake.

Observe that, just as *my eyes* in *I cried my eyes blind* has no direct relationship to the verb *cry*, so the expletive object *the shit* has no direct semantic relationship to the verb *run*. The constructions differ in that the resultative attribute expresses directly the extent to which the action is performed, while in the expletive object constructions, the expletive object itself indicates the extent.

[6]Verbs of perception which focus on the manner or intensity, rather than on the act, do marginally allow resultatives:

She stared him *down*.

?Medusa stared the hero *into stone*.

[7]That *at John* has the function OBJECT within the LFG framework is shown by the fact that it can passivize:

John was shot at.

See Bresnan (1982b) for an analysis of prepositional passives.

[8]Change of location verbs can be used METAPHORICALLY to denote change of state:

He went mad.

She drove him mad.

He sent her mad.

But they cannot be used with both a change of location attribute and a change of state attribute.

    *She went mad into the lunatic asylum.

    *She drove him mad into the lunatic asylum.

    *He sent her mad into the lunatic asylum.

[9]The resultative construction in Warlpiri, for instance, can co-occur with verbs of change of location:

Wanta-kurra ka-lu   karli   yirra-rni, linji-karda.
Sun-ALL   PRES-3pl boomerang-ABS put-NPST   dry-TRANSL
They put boomerangs in the sun to dry.

[10]I argue in Simpson (1983) that the relative freedom of Warlpiri resultatives, in comparison with English resultatives, can be attributed to the former being adjuncts which are not arguments of verbs, and the latter being complements which are selected by particular verbs.

[11]See Schein (1982) for a similar analysis.

[12]To my knowledge, attention was first drawn to the complementary distribution of resultatives and certain other complements in Halliday (1967).

[13]David Dowty pointed out to me that if locatives and intransitive prepositions are taken to be resultative attributes, examples such as the following are problematic.

    She dished the food out into the bowls.

If both *out* and *into the bowls* are distinct resultative attributes, then complementary distribution is violated. However, I think that in this example *out into the bowls* is a single complex resultative attribute. Similarly, in the following example *out cold* probably forms a complex resultative attribute.

The boxer knocked the men out cold.

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