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It Can't Go Down the Chimney Up; Paths and the English Resultative

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1. Introduction

There has been a surge of interest recently in the English resultative construction (Bresnan and Zaenen 1990, Hoekstra 1987, Jackendoff 1990, Levin and Rappaport 1990b, Randall 1983, Simpson 1983, Van Valin 1990). However, few of these accounts have attempted to explain certain co-occurrence restrictions. It is these restrictions that are the focus of this paper. The first restriction is that resultatives cannot occur with directional phrases. For example:

1. a. *Sam kicked Bill black and blue out of the room.
 (∗Sam kicked Bill out of the room black and blue.)
- b. *Sam tickled Chris silly off her chair.
 (∗Sam tickled Chris off her chair silly.)

At the same time, resultatives can co-occur with prepositional complements that are not directionals:

2. a. Lou talked himself blue in the face about his latest adventure.
 b. Joe loaded the wagon full with hay.
 c. He pried the door open with a screwdriver.

Another constraint on the occurrence of resultatives is that they cannot be applied to the theme argument of ditransitive expressions. For example:

3. a. *Joe kicked Bob a suitcase open. (meaning Joe kicked the suitcase to Bob, causing the suitcase to fly open)

These constraints on resultatives do not extend to depictive or "current-state" predicates. Depictive predicates can occur with directional phrases:

4. The chef put the dish into the oven hot. (meaning the chef put the dish into the oven while the dish was hot)

And they can predicate the theme argument of ditransitive expressions:

5. Fred handed him the towel wet. (meaning Fred handed him the towel while the towel was wet)

2. The Unique Path (UP) Constraint

I would like to suggest that the above restrictions can be explained in the same way as the following, more straightforward examples:

6. a. *Ann pushed Shirley out of the window down the stairs. (on the interpretation that the stairs are not located outside the window)
 b. *Shirley sailed into the kitchen into the garden.

The constraint can be called the **Unique Path (UP) constraint**: if an argument X refers to a physical object, then more than one distinct path cannot be predicated of X within a single clause. The notion of a single path entails two things:

- 1) X cannot be predicated to move to two distinct locations at any given time t.
- 2) The motion must trace a path within a single landscape.

In the case of literal motion of an object, this constraint is unremarkable. However, I will be suggesting that the UP constraint applies not only to literal motion, but to metaphorical motion as well.

The stipulation that the motion must occur within a single landscape is meant, then, to rule out examples which would combine literal and metaphorical motion such as the following:

7. *The vegetables went from crunchy into the soup.

The UP constraint can be seen to be relevant to resultatives if resultatives are understood as coding a metaphorical change of location. The necessary metaphor is a general systematic metaphor involving understanding changing state in terms of moving to a new location. The mapping involved is simply:

change --> motion

state --> location

English expressions reflecting this metaphor include:

8. a. The jello *went from liquid to solid* in a matter of minutes.
 b. He *couldn't manage to pull himself out of his miserable state*.
 c. No one could help her as she *slid into* madness.

By allowing that resultatives metaphorically code a change of location, and understanding the UP constraint to apply to metaphorical changes of location as well as literal ones, we can explain the co-occurrence restrictions described above. That is, a resultative would be restricted from occurring with a directional because the directional, coding a change of physical location, would code a distinct path from the change of state resultative. The argument in question would be prevented from being understood to simultaneously move to two distinct locations.

Since this constraint applies to both literal and metaphorical paths, it is not strictly a semantic constraint since it is possible to undergo a change of state and a change of physical location simultaneously. That is, while the following is ungrammatical:

9. *Ann kicked her black and blue down the stairs.

it is quite conceivable that a person be kicked down the stairs and become black and blue simultaneously.

At the same time, the constraint is not simply syntactic since we will see below that it is sensitive to the lexical semantics of the verb, and since, moreover, what counts as a distinct path is a semantic notion. Therefore, this constraint appears to be a constructional constraint--that is, a constraint on the pairing of syntax and semantics.

The status of the UP constraint can be viewed as analogous to the constraint that a given role can only be expressed once per clause (Fillmore 1968). However, the UP constraint is not naturally viewed as an instance of the latter constraint since there is no precedent for calling "path" a semantic role, and path is clearly the relevant notion since the constraint holds of (combinations of) directions, routes, sources, and goals. Moreover, semantic role analyses generally assign two semantic roles, *source* and *goal* to expressions such as the following:

10. Elena ran from Harvard Square to the river.

However, there is only a single path specified.

3. Accounting for other co-occurrence restrictions on resultatives

3.1, Resultatives with Ditransitives

Concerning the restriction against resultatives occurring with ditransitive expressions, I and others have argued elsewhere that the ditransitive construction is associated with the semantics of transfer: an agent causes someone to receive something. Despite the fact that the transfer need not be actual physical transfer, there is reason to think that the recipient argument is understood to code the endpoint of an actual, projected or metaphorical path. This idea has been previously suggested by Gruber(1965) and Jackendoff (1972), and is supported by the fact that a distinct overt goal cannot be specified. For example:

11. *Bill gave John a sandwich to Bob.

The constraint against ditransitives and (additional) goal arguments can account for the ungrammaticality of the following:

12. *Joe kicked Bob the suitcase open. (on the resultative reading)

since the suitcase would be understood to move both to Bob and to an open state simultaneously, violating the UP constraint.

3.2. Two Resultatives

The fact that two distinct resultative phrases cannot co-occur can also be explained by appealing to this constraint. That is, we can successfully disallow:

13. a. *She kicked him bloody dead.
b. *He wiped the table dry clean.

on the grounds that the two resultatives designate two distinct changes of state -- that is, that they are not metaphorically understood in terms of a single path.

At the same time, the UP constraint does not prevent two non-verbal predicates from occurring if they do not correspond to two distinct changes of state. So, if one of the predicates is depictive, the constraint does not predict any restriction on their occurrence. And we find that in fact two non-verbal predicates can occur as in the following:

14. a. The clay won't set stiff cold. (resultative+depictive)
b. You can rub the clay smooth wet. (resultative+depictive)

3.3. Multiply Specified Paths

Notice that the constraint does not state that two distinct locations cannot be specified. In fact, two locations can be specified as long as they do not define two distinct paths. For example:

15. She kicked him out of the house through the back door.

through the back door serves to further specify the path designated by *out of the house*: there is only one path, with *through the back door* modifying *out of the house*.

Similar to these cases, we find that if one of the resultatives is understood to be a further specification of the other, two resultatives can co-occur. In this case one serves to modify the other, and together they form a single constituent, as in:

16. a. He nailed the door closed shut.
- b. He washed his face shiny clean.
- c. He made her worried sick.

Carrying this line of thought one step further, notice that prepositional directionals are not always used to designate literal changes of location, but can be used in various metaphorical ways. For example, directional phrases can be used to designate a change of psychological state:

17. a. He drove her into a state of extreme anxiety.
- b. She dragged him out of his bad mood.

They can also be used to designate changes of states of existence:

18. a. The magician transformed the scarf into a rabbit.
- b. The fisherman carved a flute out of a piece of wood.

Given this, we would predict that prepositional directionals can occur with resultatives as long as one is understood to further specify the other, defining a single path. True to this prediction we find the following examples are acceptable:

19. a. He pounded the dough flat into a pancake-like state.
- b. The liquid froze solid into a crusty mass. (ex. from George Bergman)

At the same time, adjective resultatives can be used to designate a physical state that may involve a physical spatial location, as in:

- 20a. He knocked them apart.

Again, as we would expect, this type of example can occur with a directional that further specifies the path:

- 20b. He knocked them apart to different sides of the room.

These cases seem to indicate that the constraint is not against resultatives occurring with directionals *per se*, but rather against more than one distinct path being specified.

3.4. Resultatives with Lexically Specified Paths

There is another class of co-occurrence restrictions that the UP constraint together with a metaphorical account of resultatives can account for. This class involves the failure of resultatives to occur with verbs which lexically code a physical path. That is, as Levin and Rappaport (1990a) and Simpson (1983) have pointed out, resultatives cannot occur with directed-motion verbs when used literally. For example:

21. a. *The box arrived open. (meaning arrival caused the box to open)
- b. *Jill took the child ill. (meaning the child became ill because of the traveling)
- c. *She ascended sick. (meaning the ascension made her sick)

This restriction can be accounted for by the UP constraint since these verbs lexically identify a physical path, while the resultatives would specify a distinct, metaphorical path. To further illustrate this point, notice that although *throw* normally entails that the theme argument moves along a physical path, when used with a resultative, no path is implied:

22. He threw the suitcase open. (this must mean that he forcefully opened the suitcase; it cannot mean that the suitcase was thrown across the room)

At the same time, many verbs of directed-motion can be used metaphorically to code changes of state. This fact in itself is motivated by the existence of the metaphor. When used in this way, verbs of directed-motion do not code a distinct path from the change of state resultative. And, as we would expect, they can occur felicitously with resultatives as long as a single path is designated. For example:

23. a. He fell asleep. (he doesn't literally fall anywhere, but metaphorically falls into sleep)
- b. He went crazy. (he does not literally go anywhere, but metaphorically moves to the state of insanity)
- c. The story brought him to tears. (he is not literally brought anywhere, but metaphorically is brought to the state of crying).

4. A note about the title

The title of this paper at the BLS conference was "You Can't be in Two Places at Once: Paths and the English Resultative." However, this title was somewhat misleading because there does not seem to be a Unique Location constraint that corresponds to the UP constraint. That is, there does not seem to be a constraint against *being* in two locations if one of them is metaphorical, only against *moving* to two locations. For example, the following is perfectly acceptable:

24. They found her in Kansas in a deep depression.

In this example *in a deep depression* appears to be encoding a metaphorical location distinct from the location *in Kansas*. In order to avoid misunderstanding, I have chosen a different title.

The current title, "It can't go down the chimney up" is an allusion to the riddle, What can go up the chimney down, but not down the chimney up? The oddness of the question stems from the fact that *down* and *up* tend to be interpreted consistently in both clauses as path markers. However, the answer "an umbrella," illuminates the intended interpretation that each is to be interpreted once as a path marker and once as a depictive predicate².

5. Apparent Counterexamples

The following example appears to pose a challenge to the UP constraint:

25. He pushed her through the window to her death. (ex. from Michele Emanatian)

Here the phrase *to her death* seems to code a metaphorical path distinct from the path coded by *through the window*. However, *to her death* is an idiom which metonymically stands for "the place where she died."³ Notice:

26. He shot her dead.

implies only that she died, while,

27. He shot her to her death.

implies that she literally moves from the shot, becoming a physical trajectory. Similarly, there is a difference in meaning between:

28. a. He pushed her to her death. (she necessarily moves)
- b. He pushed her to death. (she does not necessarily move)

In cases where no literal motion can be implied, *to her death* is unacceptable:

29. a. *He annoyed her to her death.
b. He annoyed her to death.

Therefore, in the original apparent counterexample, we can understand a single physical path to be specified: she moved out her window to the place where she died.

Another apparent counterexample is evident in:

30. Arnold pushed Jane through the workout to the point of exhaustion.

In this example, *to the point of exhaustion* seems to code a metaphorical path distinct from the path encoded by *through the workout*. However, in this case the *to the point of exhaustion* phrase does not predicate the theme argument, *Jane*, but instead acts as a temporal-like boulder of the entire event. Notice that since it is a temporal-like bounding phrase, it can only apply to potentially unbounded or atelic events, not telic ones. Therefore we find the following to be ungrammatical:

31. *He got me through the workout to the point of exhaustion. (ex. from G.Lakoff)

Syntactically, *to the point of exhaustion* is attached at a level outside the first VP. Notice it can be fronted:

32. To the point of exhaustion, he pushed her through the workout.

It can also be left out of *do so*:

33. Yesterday, he pushed her through the workout to the point of exhaustion, and today he did so to the point of near heart-attack.

A similar type of apparent exception to the UP constraint comes from the means clause in:

34. Through his own bravery, he finally arrived safely.

If we accept without argument that the means clause "*through his own bravery*" codes a metaphorical path, then it seems that the main clause predicates a distinct literal path. However, the means clause is predicating the event, while the literal path encoded by *arrive* is predicated of the subject, *Joe*. Therefore, we find again that two distinct paths are not predicated of a single argument, so the UP constraint is not violated.

5.1 Changes of Position

The definition of a single path in the UP constraint required that the path be defined within a single landscape. In this way the constraint ruled out cases in which both literal and metaphorical paths were predicated of a single argument. However, the motion involved in a literal path must be distinguished from the motion involved in a change of physical shape or position. In the latter type of motion, the object undergoing the change remains anchored at a fixed location, while rearranging parts of its extension in space. It turns out that expressions which encode a change of physical shape or position can occur with resultatives or directionals which further specify that shape or position. For example, we find:

35. a. Stand up straight.
b. He got down into a squatting position.
c. He pounded the box down flat. (ex. from Len Talmy)
d. The door slid open.

e. The trap door fell shut. (ex. from Paul Kay)

These cases are not ruled out by the UP constraint because the physical motion involved does not define motion *to* or *from* a location; i.e., the physical motion does not define a path through space, therefore two distinct paths are not involved.

6. About the evidence

I have argued that the reason resultatives cannot occur with literal directionals or with ditransitive expressions is that distinct paths would be specified. The fact that resultatives cannot occur with *arrive*, *ascend*, *bring*, and other verbs which imply a physical path stems from the fact that a change of state resultative would code a distinct path that would also be predicated of the theme argument.

We have been able to account for the fact that two resultatives cannot co-occur unless one is understood to modify the other (in which case they form a single constituent), and similarly that prepositional directionals can be used with resultatives when they are understood to modify or further specify the change of state designated by the resultative. Therefore, a wide variety of data can be accounted for by understanding the metaphorical interpretation of resultative expressions.

In arguing for this account, I have not suggested paraphrases as evidence, despite the fact that paraphrases are often assumed to be the main or even the only source of evidence for such analyses. I have avoided using them for the following reason. To suggest that because a paraphrase of an expression involves a metaphor, that the original expression necessarily involves the same metaphor, is to make an extremely strong claim. It is to claim that this particular metaphor necessarily underlies our understanding of such situations, and therefore must be inherent in *any* formulation of the situation. That is, by using evidence from paraphrases, we are assuming that the paraphrases construe the situation in the same way as the original expression. However, there are several other possibilities. The first is that the expression may be understood on the basis of a different metaphor. This is possible since it is typically the case that there is more than one metaphorical understanding of a given domain.

For example, along with understanding changes of state in terms of changes of location, Jane Espenson (personal communication) has noticed that we can understand changes of state in terms of changes of shape. Examples of this include:

36. a. She re-shaped him.
b. She molded him in her image.
c. He was unbendable on most issues.

Another possibility is that a metaphorical understanding is necessary, but the expression itself is underspecified as to which metaphor is chosen. For example, we know that change can be understood in terms of motion to a new location or change of shape, but examples such as:

37. The lizard changed colors.

do not clearly indicate any particular metaphor. A third possibility, is that the expression is understood literally, without reference to any metaphor.

Paraphrases can be used to argue that a given metaphorical understanding has linguistic reflexes in a particular language -- that is, that metaphors are not being stipulated on an ad hoc basis. I have used expressions that do not involve resultatives but do reflect the metaphor for this purpose. However I have suggested that a metaphor is involved specifically in the resultative construction⁴, not on the basis of paraphrases, but on the basis of the fact that a variety of often subtle co-occurrence restrictions can be accounted for given the metaphorical account. That is, the metaphor allows us to make generalizations.

7. Alternative Analyses

It may be suggested that we can avoid appealing to the metaphor by reformulating the UP constraint as a target domain constraint. In this way, we might be able to avoid reference to any metaphorical interpretation of resultatives. That is, it may be suggested that the constraint can instead be stated as follows:

Unique Change of State Constraint: if an argument X refers to a physical object, then more than one distinct change of state cannot be simultaneously predicated of X within a single clause. This constraint would require that:

- 1) X cannot be predicated to undergo two distinct changes of state at any given time t.
- 2) Any sequence of changes must be understood to involve the same type of change.

In order for this formulation to account for the co-occurrence restrictions between resultatives and directionals, it would require that we consider changes of location to be instances of changing state. In this way, what had up to now been analyzed as involving two distinct paths could be reanalyzed as involving two distinct changes of state. That is, we could try to account for the data cited above without recourse to any metaphors.

However there is reason to prefer the Unique Path formulation to this one. In order for the latter formulation to be viable, we would need to consider all changes of location as instances of changing state, not only those which specify a final destination. For example in the following:

38. Joe moved Bob toward the door.

the direct object, *Bob* would necessarily be understood to undergo a change of state. But if we generalize the notion of "change of state" to this degree, it seems that undergoing any kind of effect would entail a change of state. But this would entail that Bob undergoes a change of state in, for example:

39. Joe kicked Bob.

And then the proposed Unique Change of State constraint would be violated by sentences such as:

40. Joe kicked Bob into the room.

Moreover, I have not argued that *all* of even the clear instances of changes of state involve the metaphor. That is, there is no evidence that I know of that simple causative verbs involve the metaphor. For example, although *break* is a causative verb, we have no reason to think that it is necessarily understood in terms of *causing to move to a broken state*. And, if we let the UP constraint be our guide, then there is good reason to think that it does not involve the metaphor. That is, we find that *break* can occur with a literal directional:

41. He broke the walnuts into the bowl.

For these reasons, I have chosen to retain the UP constraint in favor of a Unique Change of State constraint.

It is also worth pointing out why the UP Constraint is preferable, in accounting for the data presented here, to a general constraint that there can only be one event per clause. The problem with the latter constraint is that it is difficult to define *event* in a non-circular way; that is, if we take care to avoid stipulating that an event is whatever is described in a single clause, then it is not clear that the constraint can explain the relevant cases. For example the following:

42. *She kicked him black and blue down the stairs.

although unacceptable, does not clearly describe more than one event, while:

43. a. Elena traveled from Pennsylvania through NY to Boston.

b. Susan frightened Eric into a marriage proposal.

although acceptable, can easily be interpreted as involving what seems to be more than one event.

The account presented here of the co-occurrence restrictions described above can also be contrasted with two accounts that have been suggested in the literature. Simpson (1983) suggests that the co-occurrence restrictions against resultatives occurring with directionals are accounted for by the principle that only one XCOMP, or predicative complement, can appear in a given clause. This account takes both resultatives and prepositional directionals to be XCOMPs. In the case of prepositional directionals, this is a move away from their more traditional category of Obl, but it is a reasonable move since directionals can be understood to predicate the theme argument. By distinguishing directionals from other prepositional complements, Simpson's account can satisfactorily explain why resultatives can occur with other prepositional complements, but not specifically with directionals. At the same time, depictive predicates are analyzed as XADJUNCTs, and so they are not subject to the same constraint.

However, Simpson's account fails to generalize over the fact that resultatives cannot occur with ditransitive expressions. That is, ditransitive expressions are analyzed as involving a Subj, an Obj, and an Obj θ ; the fact that the resultative XCOMP cannot be added is not explained. Moreover, this account does not generalize to account for why directed-motion verbs when used literally cannot occur with resultatives, but can when used metaphorically to code a change of state. Finally, this account has the problem of explaining why it is that two directionals can co-occur as long as a single path is designated. For example:

44. Ken drove to LA from Pittsburgh.

Notice, we cannot readily claim in this example that a single constituent is involved because *only* can have as its focus anything in its sister constituent (McCawley 1986), and yet we find that *only* cannot have as its focus *Pittsburgh* in the following example:

45. *Ken drove only [to LA from *Pittsburgh*.]

This fact argues strongly against *to LA from Pittsburgh* being treated as a single constituent.

The second suggestion for accounting for many of the co-occurrence restrictions cited here comes from Levin and Rappaport (1990a) who follow Tenny

(1987) in arguing that resultatives act as delimiters or bounders of events, and that a clause can only be delimited once. This claim is used to account for the non-occurrence of resultatives with verbs like *arrive*. They note that *arrive* is inherently delimited because it is an achievement predicate, and cannot be delimited again by a resultative. However, both accomplishment and achievement predicates, which are inherently delimited in Tenny's sense, often occur felicitously with resultatives. For example:

46. a. The water froze solid. (achievement)
 b. The door closed shut. (achievement)
 c. Nina broke the walnut apart. (accomplishment)

Moreover, directionals do not always serve to delimit the event. Directionals can be used to specify a direction, without implying any endpoint or delimiting point, as in:

47. She kicked him toward the door.

However these non-delimiting directionals are also restricted from occurring with resultatives:

48. *She kicked him black and blue towards the door.

Presumably we would like to have the same constraint account for both examples 47 and 48. For these reasons, Levin and Rappaport's suggestion can be seen to be inadequate.

8. Associating the metaphor with the construction

If we accept the metaphorical analysis presented here, the question arises as to where the metaphor should be stated. Since it is commonly accepted that the main verb is the pivotal element in the clause, we might consider notating the relevant verbs with the metaphor, Change of State is Understood as Change of Location. However, it is clear that although verbs of change of location can occur in this construction as in:

49. He *drove* her crazy.

most of the cases do not involve verbs which lexically code motion. To associate the metaphor, for example, with the verb *kick*, that is, to stipulate that *kick*, when used to imply a change of state is understood to code a metaphorical change of location, seems to miss the point that the metaphor has been shown to be involved specifically with resultatives.

At the same time, the metaphor cannot plausibly be associated with the adjective because there is no reason to think that the metaphor concerning change of state is involved when these same adjectives occur in stative predications. Therefore, the metaphor must be associated directly with the resultative construction, however that construction is captured in the grammar. If the resultative is captured by a lexical rule, then the metaphorical interpretation should be notated on the output of the rule; if the resultative is captured by construction or constructional idiom, as has recently been proposed by Jackendoff 1990, the interpretation of the construction will have to make reference to this metaphor.

Endnotes

1. I would like to thank George Bergman, Michele Emanatian, Jane Espenson, Hana Filip, Jean-Pierre Koenig, Alan Schwartz and especially George Lakoff for helpful criticisms and comments on an earlier draft. All errors are

solely my own.

2. I thank George Bergman for suggesting this as a title.
3. I would like to thank Jane Espenson for suggestion the idea that a metonymy was involved.
4. It should be kept clear that I have not argued that all expressions which notionally refer to a change of state are necessarily understood on the basis of change to a new location. For example, I have no evidence to suggest that the following are understood on the basis of motion to a new location:
 - a. He opened a can of peas.
 - b. He caused the canvas to become red.

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