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# The Resultative Parameter and Restitutive *Again*

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## 1. Introduction

This paper provides evidence for a semantic parameter. The parameter consists in the (un-)availability of a principle of semantic composition creating accomplishments. The evidence comes from crosslinguistic variation in the availability of restitutive readings for *again*.

Stechow (1995) proposes a special interpretation principle that handles the interpretation of resultative constructions. It introduces a causation relation between two predicates and thereby constructs an accomplishment type predicate syntactically, from an activity (the matrix predicate) and a state (the result predicate). We call this principle (R). Snyder (1995, 2000) argues that the availability of such an interpretation principle is subject to parametric variation. Not all languages permit resultative constructions. This is viewed here as a semantic parameter: lack of a matching interpretation principle renders the constructions uninterpretable, hence ungrammatical.

The focus of (Stechow 1995) is repetitive vs. restitutive *again*. He provides an analysis of restitutive *again* with both syntactic and lexical accomplishments (relying on the resultative interpretation principle and on decomposition, respectively). In this paper we examine crosslinguistic variation in the availability of restitutive readings. We find that languages that do not have resultatives, i.e., do not allow the construction of accomplishments in the syntax, permit restitutive readings with a more limited range of predicates than languages that do have resultatives. The former disallow restitutive readings with predicates like 'walk to the summit', which we will call goal-PP constructions; they do permit

restitutive readings with lexical accomplishments. We conjecture that the interpretation of goal-PP constructions involves the parameterized interpretation principle (R) in the languages that have it: An activity matrix predicate is combined with a result predicate to form an accomplishment. They do not denote an accomplishment in (R)-less languages.

Our research supports the view that the proposed parameter consists in the availability of an interpretation principle: Goal-PP constructions are grammatical, but not interpretable as accomplishments in languages without (R). It also supports Stechow's (1995) view that the analysis of lexical accomplishments should be different from the analysis of syntactic accomplishments. Finally, the crosslinguistic data indicate that the result state for restitutive *again* needs to be linguistically specified. It seems that *again* does not have access to an independent, conceptually given target state.

We first present the evidence from Snyder (1995, 2000) for a resultative parameter (Section 2). In Section 3, we introduce Stechow's (1995) analysis of resultatives and extend it to goal-PP constructions. Section 4 discusses Stechow's analysis of restitutive *again* with lexical accomplishments and with resultative constructions (Section 4.1). We then report the behaviour of restitutive *again* crosslinguistically (Section 4.2) and analyze it in Section 4.3. Section 5 concludes the paper.

## 2. The Resultative Parameter

The starting point for the present investigation is the observation that the availability of resultative constructions like (1) varies across languages. While English, for example, allows them, they are ungrammatical in Spanish.

(1) Mary beat the metal smooth.

(2) María golpeó el metal (*liso).
Mary beat the metal (*smooth)

This crosslinguistic variation in the availability of resultative constructions is tied to variation in other points of grammar. Snyder (1995, 2000) brings forth both crosslinguistic and acquisitional evidence that relates resultatives (among other things) to verb-particle constructions, *put*-locatives and notably, the availability of root compounding as a productive means of word-formation. He reports that in a crosslinguistic survey, languages permit the direct equivalent of (1) only if they allow novel compounds such as (3). Thus, in contrast to English, Spanish (2, 4) disallows both.

(3) worm can ('container for the storage of fishing worms')

(4) bote *(de) gusanos
can *(of) worms

The resultative construction is relatively infrequent in spoken English, but verb-particle constructions such as (5) are quite common, and show a similar association with productive root compounding.

(5) Chris picked the book up.

In a study of ten children learning English, Snyder found that each child began producing verb-particle constructions at almost the exact age when she or he began producing novel (non-lexical) noun-noun compounds.

The association with root compounding is unidirectional, however: Languages with resultatives or verb-particle constructions consistently have productive root compounding, but the opposite does not hold. Basque is an example of a language that allows productive root compounding, but disallows both resultatives and verb-particle constructions. Compounding thus seems to be a prerequisite for allowing resultatives. We propose that the availability of resultatives depends both on root compounding, and on a parameter of semantic interpretation, which we term the Resultative Parameter. In languages with the positive setting of the Resultative Parameter, accomplishment predicates such as 'beat smooth' can be created in the syntax, by combining a verb describing a simple activity like *beat*, with an adjective phrase describing a result state. Below we will formalize the Resultative Parameter in terms of Stechow's (1995) analysis of resultatives.

First, however, we follow (Snyder 1995) in proposing that the Resultative Parameter is also responsible for another point of crosslinguistic variation between English and Spanish observed in (Aske 1989). In English one can create an accomplishment predicate by combining an activity verb such as *walk* with a goal PP such as 'to the summit'. Hence, a delimiting temporal phrase 'in an hour', which is possible with accomplishments but not with activities, is impossible in (6) but fully grammatical in (7).

(6) *Paul walked in an hour.

(7) Paul walked to the summit in an hour.

In contrast, in Spanish the temporal delimiter is impossible with an activity verb even when a goal PP is present:

(8) Pablo caminó hasta la cima (* en una hora).
Pablo walked up-to the summit (* in one hour)

We propose that the crucial difference between English and Spanish is again that English permits construction of accomplishments in the syntax - in the present example from an activity verb and a goal PP - while Spanish does not. This combination of an activity verb with a PP specifying a goal is what we call a goal-PP construction.

# 3. Stechow (1995) on Resultatives

## 3.1 Resultatives and the Composition of an Accomplishment Predicate

Stechow (1995) provides an interpretation principle specifically for resultative constructions. Below is a German example and the structure Stechow associates with it:

(9) a. Olga ihren Sohn gesund betete.
Olga her.Acc son.Acc healthy prayed
'Olga prayed her son healthy.'

b. Fritz das Eisen.Acc flach hämmerte.
Fritz the.Acc iron.Acc flat hammered
'Fritz hammered the iron flat.'

(10) [[das Eisen] [1[$_{VP}$ Fritz [$_{V'}$ t1 [$_{V'}$ [$_{SC}$PRO1 flach] hämmerte]]]]

The small clause does not combine with the matrix verb in a straightforward way. Stechow suggests the following interpretation principle for such structures:[1]

(11) If $\alpha=[_{SC}\beta\ V\gamma]$ and $\beta$' is of type $\langle s,\langle\tau,t\rangle\rangle$ and $\gamma$' is of type $\langle e,...\langle e,\langle s,\langle\tau,t\rangle\rangle\rangle\rangle$ (where $\gamma$' is an n-place predicate),
then $\alpha'=\lambda x_1...\lambda x_n\ \lambda w\lambda t.\ CAUSE_{W,t}\ (\lambda w'\lambda t'.\gamma'_{W',t'}(x_1)...(x_n),$
$\lambda w''\lambda t''.BECOME_{W'',t''}(\beta'))$

An intuitive understanding of the meanings of CAUSE and BECOME should be enough for our purposes: CAUSE is a relation between two propositions and holds if the first causes the second; BECOME is a property of propositions and holds of a proposition at a time t if the proposition was false at the beginning of t and is true at the end of t.[2] Let us apply the rule to our example:

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[1] We use an extensional language instead of IL as in (Stechow 1995). Here, s is the type of worlds, and $\tau$ is the type of time intervals. World and time arguments are written as subscripts, for readability. We do not have an utterance index, only an evaluation index.

[2] More formally:

(i) $CAUSE_{W,t}(p,q)=1$ iff p(w,t)=1 & q(w,t)=1 &
there is a w* such that p(w*,t)=1 & q(w*,t)=1 &
for any w' such that p(w',t)=0 & q(w',t)=0, w' is at least as similar to w as any w'' such that p(w'',t)=0 & q(w'',t)=1.

(ii) $BECOME_{W,t}(p)=1$ iff t is the smallest interval such that
there is a t':rb(t')=lb(t) & p(w,t')=0 &
there is a t'':rb(t)=lb(t'') & p(w,t'')=1.

Here lb(t) is the left boundary of t, and rb(t), the right boundary. The semantics goes back to Lewis (1973) and Dowty(1979).

(12) a. [[$PRO_1$ flach] hämmerte] $\rightarrow$
$\lambda x \lambda y \lambda w \lambda t.CAUSE_{W,t}(\lambda w' \lambda t'.hammer_{W',t'}(x)(y),$
$\lambda w'' \lambda t''.BECOME_{W'',t''}(\lambda w^* \lambda t^*.flat_{W^*,t^*}(x_1))$

b. Fritz das Eisen flach hämmerte $\rightarrow$
$\lambda w \lambda t.CAUSE_{W,t}(\lambda w' \lambda t'.hammer_{W',t'}(Fritz)(the\_iron),$
$\lambda w'' \lambda t''.BECOME_{W'',t''}(\lambda w^* \lambda t^*.flat_{W^*,t^*}(the\_iron))$

Without the principle in (11), (9,10) would be uninterpretable, due to a type mismatch. Principle (11) resolves that mismatch by introducing CAUSE BECOME into the semantics, and derives the intuitive interpretation of resultative constructions.

The spirit of this proposal and its essential properties fit very well with the results by Snyder reported above: Resultatives are interpreted via their own special principle, not with a standard method of composition. Such a principle may or may not be available in a given language. We have found a plausible point of parametric variation within the interpretation component.

Moreover, if we assume Dowty's (1979) classical analysis in which accomplishment predicates are just those that involve CAUSE and BECOME, what this principle does is precisely combine an activity and a result state to form an accomplishment. We will call (11) "Principle (R)" from here on. and assume that the availability of (R) is the Resultative Parameter.

According to our speculation above, this principle should be involved in English 'walk to the summit' and turn it into an accomplishment predicate. In (13) and (14) we give an indication of how this might happen.

(13) [ Sally [1 [ $t_1$ [ walked [$_{PP}$ $PRO_1$ to the summit]]]]]

(14) a. [$PRO_1$ to the summit] $\rightarrow \lambda w \lambda t.at_{W,t}(the\_summit)(x_1)$

b. [ walked [$_{PP}$ $PRO_1$ to the summit]] $\rightarrow$
$\lambda x \lambda w \lambda t.CAUSE_{W,t}(\lambda w' \lambda t'.walk_{W',t'}(x),$
$\lambda w'' \lambda t''.BECOME_{W'',t''}(\lambda w^* \lambda t^*.at_{W^*,t^*}(the\_summit)(x_1))$

c. Sally walked to the summit →
$\lambda w \lambda t.\text{CAUSE}_{W,t}(\lambda w' \lambda t'.\text{walk}_{W',t'}(\text{Sally}),$
$\lambda w'' \lambda t''.\text{BECOME}_{W'',t''}(\lambda w^* \lambda t^*.\text{at}_{W^*,t^*}(\text{the\_summit})(\text{Sally}))$

## 3.2 Goal-PP Constructions Crosslinguistically

A first prediction we make with this analysis of goal-PP constructions is that predicates like 'walk to the summit' are accomplishments only in languages that have (R). Modifiability with temporal PPs like 'in an hour' is in general thought to be possible with accomplishments. That is what we suggested regarding the ill-formedness of the Spanish example (8). More generally, we expect that goal-PP constructions can be modified by 'in an hour' only in (R) languages. That is, the well-formedness of 'walk to the summit in an hour' should correspond, across languages, to the setting of the resultative parameter.

We checked whether the combination of 'walk to the summit' with 'in an hour' is well-formed in French, German, Hebrew, Hindi/Urdu, Japanese, Khmer, Korean, Mandarin, Russian and Spanish.[3] Below are the actual example sentences:

French:

(15) * Jean a marché au sommet en une heure.
Jean has walked to-the summit in one hour

German:

(16) Ottilie ist in einer Stunde zum Gipfel gelaufen.
Ottilie is in one hour to-the summit walked

[3] Given Snyder's findings reported in Section 2, Basque would clearly be a particularly useful language to test. Interestingly, goal–PP constructions are ungrammatical in Basque:

(i) * Joe etxe-ra ibil-i zen/zuen.
Joe-Absolutive home-to walk-participle aux(intrans)/aux(trans)
'Joe walked home.'

Thus far, Basque is the only language we have encountered in which goal–PP constructions are completely impossible; it is not entirely clear to us at present how this is to be interpreted.

Hebrew:

(17) * Dan halax el ha-kfar tox Sa'a.
Dan walked to the-village in an-hour

Hindi/Urdu:

(18) * Veneeta do ghante mein <summit> ki taraf chal-ii
Veneeta two hours in summit Gen-F.Sg towards walk-Perf.F.Sg

Japanese:

(19) Suresh-ga 2 jikan-de mura-made aruita.
Suresh-Nom 2 hours-in village-to walk-Past

Khmer:

(20) Joe dae(r) tiu kompul knong mu:ey maong.
Joe walk go/to summit within one hour

Korean:

(21) Suresh-nun 10 pun-mane maul-lo tallie ka-(a)ss-ta.
Suresh-Top 10 minute-in village-Dir run go-Past-Decl

Mandarin:

(22) Wo$^{3}$ shi$^{2}$ fen$^{1}$zhong$^{1}$ nei$^{4}$ (qu$^{4}$) zou$^{3}$ dao$^{4}$ le na$^{4}$ge cun$^{2}$zi.
I ten minute in (go) walk to Perf. that village

Russian:

(23) * Suresh prishel v derevnju za 10 minut.
Suresh Perf.walked to village in 10 minutes

Spanish:

(24) * Juan anduvo hasta la cima de la montaña en una hora.
Juan walked to the summit of the mountain in one hour

Our results are summarized in Table 1. The setting of the resultative parameter is from (Snyder 2000) for all languages except Hindi/Urdu and Japanese. Hindi/Urdu has neither resultatives nor noun-noun compounding, and accordingly receives a negative setting. Japanese received a positive setting in (Snyder 2000), but there is some controversy regarding the status of resultatives in Japanese. Washio (1997), for example, observes that the construction is far more limited in Japanese than in English. We have bracketed the + setting for Japanese, to indicate these reservations.

*Table 1: Crosslinguistic survey of goal-PP constructions*

| Language: | (R)-parameter: | Goal PP + temporal *in* PP: |
|---|---|---|
| | | |
| English | + | ok |
| German | + | ok |
| Japanese | (+) | ok |
| Khmer | + | ok |
| Korean | + | ok |
| Mandarin | + | ok |
| | | |
| French | – | * |
| Hebrew | – | * |
| Hindi/Urdu | – | * |
| Russian | – | * |
| Spanish | – | * |

Our crosslinguistic results show that Aske's observation, as well as Snyder's interpretation of it, have substance and are correlated with the proposed parameter. In (Beck & Snyder, in press) we report acquisitional evidence to the same effect: Goal-PP constructions are associated with the setting of the resultative parameter in English-learning children. We will henceforth assume that goal-PP constructions are indeed interpreted via (R) in those languages that have (R), as demonstrated above for English.

# 4. Crosslinguistic Variation in Restitutive Readings

We have suggested that the availability of (R) is parameterized. Besides well-formedness of resultatives, what other predictions for crosslinguistic variation do we make? As discussed above, one prediction is that goal-PP constructions will be well-formed in (R)-less languages, but will not be accomplishments. This correctly predicted the lack of modifiability by temporal *in*-PPs, which are possible only with accomplishments.

A further prediction comes from the observation that only complex event types lead to an ambiguity when combined with *again*. Compare the activity predicate in (25b) with (25a), which in English denotes an accomplishment predicate:

(25) a. Sally walked to the summit again.
b. Sally walked in Central Park again.

While the accomplishment predicate (25a) produces two interpretations when combined with *again* (paraphrased in (26)), the activity predicate only has the reading in (27).

(26) a. Sally walked to the summit, and she had done that before.
b. Sally walked to the summit, and she had been there before.

(27) Sally walked in Central Park, and she had done that before.

Reading (26a) is called the repetitive reading, and (26b) the restitutive reading. The crucial characteristic of a restitutive reading is that the action described in the sentence does not have to have happened before; it is sufficient that a state of affairs is brought about that has occurred before.

Thus, one expectation might be that in (R)-less languages, a goal-PP construction cannot have a restitutive reading: These predicates, while grammatical in (R)-less languages, could plausibly only be accomplishments by virtue of (R). In (R)-less languages they should behave more like the simple event type in (25b) with respect to the interpretational possibilities of *again*.

Restitutive *again* is in fact the focus of (Stechow 1995). We first summarize Stechow's theory of restitutive *again*. Then, we check the availability of restitutive readings of *again* in a set of languages some of which have (R), some of which do not, according to Snyder's evidence. If our speculation above is correct, we expect a correspondence between having (R) and allowing a restitutive reading. This expectation is borne out.

## 4.1 Restitutive *Again*

### 4.1.1. Syntactically Complex Accomplishments

Resultative constructions are ambiguous when combined with *again*:

(28) a. Joe hammered the metal flat again.
b. Fritz das Eisen wieder flach hämmerte.
Fritz the iron again flat hammered
'Fritz hammered the iron flat again'

Stechow proposes that at LF, (28) is ambiguous with respect to what is modified by *again*. The structure given in (29) leads to the repetitive reading, and the one in (30) to the restitutive one.

(29) $[_{VP}$ wieder $[_{VP}$ Fritz [ [das Eisen]$_1$ $[[_{SC}PRO_1$ flach] hämmerte]]]]

(30) $[_{VP}$ Fritz [[das Eisen]$_1$ $[[_{SC}$ wieder $[_{SC}$ $PRO_1$ flach]] hämmerte]]]]

(31) a. $\lambda w^{**}\lambda t^{**}$. $again_{W^{**},t^{**}}$ ($\lambda w\lambda t$. $CAUSE_{W,t}$
($\lambda w'\lambda t'$. $hammer_{W',t'}$ (Fritz) (the_iron), $\lambda w''\lambda t''$.
$BECOME_{W'',t''}$ ($\lambda w^*\lambda t^*$. $flat_{W^*,t^*}$ (the_iron)))
b. Once more, Fritz's hammering the metal caused it to become flat.

(32) a. $\lambda w\lambda t$. $CAUSE_{W,t}$ ($\lambda w'\lambda t'$. $hammer_{W',t'}$ (Fritz) (the_iron),
$\lambda w''\lambda t''$. $BECOME_{W'',t''}$ ($\lambda w^{**}\lambda t^{**}$. $again_{W^{**},t^{**}}$
($\lambda w^*\lambda t^*$. $flat_{W^*,t^*}$ (the_iron)))
b. Fritz's hammering the metal caused it to become once more flat.

The crucial assumption is that *again* modifies the Small Clause in the restitutive reading, and the VP in the repetitive reading. We will assume that a proposition is true again iff the proposition is true and has been true once before. More formally, from (Stechow 1995):

(33) [[again]](p)(w,t) =1 iff p(w,t)=1 &
there is a t': rb(t') = lb(t) & p(w,t')=0 &
there is a t": rb(t") ≤ lb(t) & p(w,t")=1
[rb(t) is the right boundary of time interval t; lb(t), the left boundary]

Therefore, (31) will mean that the action of hammering the metal flat has to be repeated, while in (32) only the result state has to be repeated.

We treat 'walk to the summit' as a syntactically complex accomplishment; hence, we want to tell essentially the same story about the ambiguity of (25). Here are the two structures we can associate with (25) to derive the ambiguity:

(34) Sally walked to the summit again.

(35) a. [ Sally [$_{VP}$ $t_1$ walked [$_{PP}$ [$_{PP}$ $PRO_1$ to the summit] again]]]
b. [ Sally [$_{VP}$ [$_{VP}$ $t_1$ walked [$_{PP}$ $PRO_1$ to the summit]] again]]

These are straightforwardly interpreted as in (36) and (37) (where S stands for the referent of 'the summit').[4]

(36) a. $\lambda w^{**}\lambda t^{**}.\ again_{w^{**},t^{**}}\ (\lambda w\lambda t.$
$CAUSE_{w,t}\ (\lambda w'\lambda t'.\ walk_{w',t'}\ (Sally),$
$\lambda w''\lambda t''.BECOME_{w'',t''}(\lambda w^*\lambda t^*.at_{w^*,t^*}(S)(Sally)))$
b. Once more Sally's walking caused her to come to be at the summit.

(37) a. $\lambda w\lambda t.\ CAUSE_{w,t}\ (\lambda w'\lambda t'.\ walk_{w',t'}\ (Sally),$
$\lambda w''\lambda t''.\ BECOME_{w'',t''}\ (\lambda w^{**}\lambda t^{**}.$
$again_{w^{**},t^{**}}\ (\lambda w^*\lambda t^*.at_{w^*,t^*}(S)(Sally)))$
b. Sally's walking caused her to come to be once more at the summit.

[4] Note that for the moment we simply translate *to* as *at*. We will come back to this point in Section 4.3.

4.1.2. Lexical Accomplishments and Decomposition

A repetitive/restitutive ambiguity is found with all kinds of accomplishment predicates, not just syntactically complex ones. Compare (38):

(38) Sally opened the door again.

(39) a. Sally opened the door, and that had happened before.
b. Sally opened the door, and the door had been open before.

Now, the trick used above to capture this ambiguity was to have *again* modify two different predicates – the result predicate or the matrix predicate. However, with verbs like *open* we do not so obviously have a result predicate distinct from the matrix predicate.

Stechow (1995) solves this problem by decomposition of the accomplishment verb *open*.

(40) $\text{open}_{TV} = \text{open}_{Adj}$ + BECOME + CAUSE

This decomposition is reflected in the syntactic structure as follows:

(41) $[_{VP}$ Sally $[\ \varnothing_{V}\ [_{SC}\ \text{open}_{Adj}$ [the door]]]]

The empty verbal head is whatever turns adjectives like *open* into the corresponding causative transitive verb. Its meaning is given in (42). The structure in (41) translates as in (43).

(42) $\lambda p \lambda x \lambda w \lambda t.\exists P[\text{CAUSE}_{W,t}\ (\lambda w' \lambda t'.P_{W',t'}(x),$
$\lambda w'' \lambda t''.\ \text{BECOME}_{W'',t''}(p))]$

(43) a. $\lambda w \lambda t.\exists P[\text{CAUSE}_{W,t}(\lambda w' \lambda t'.P_{W',t'}(\text{Sally}),$
$\lambda w'' \lambda t''.\ \text{BECOME}_{W'',t''}(\lambda w^* \lambda t^*.\ \text{open}_{W^*,t^*}(\text{the\_door}))]$
b. There was an action of Sally's that caused the door to become open.

We once more have two possible adjunction sites for *again*:

(44) a. [$_{VP}$ [$_{VP}$ Sally [ $\varnothing_V$ [SC open$_{Adj}$ [the door]]]] again]
b. [$_{VP}$ Sally [ $\varnothing_V$ [$_{SC}$ [$_{SC}$ open$_{Adj}$ [the door]] again]]]

The two structures above then have the translations given below:

(45) a. $\lambda w^{**}\ \lambda t^{**}.\ again_{w^{**},t^{**}}\ (\lambda w \lambda t.\ \exists P[CAUSE_{w,t}$
$(\lambda w' \lambda t'.\ P_{w',t'}\ (Sally),\ \lambda w'' \lambda t''.\ BECOME_{w'',t''}$
$(\lambda w^* \lambda t^*.\ open_{w^*,t^*}\ (the\_door))])$
b. Once more, there was an action of Sally's that caused the door to become open.

(46) a. $\lambda w \lambda t. \exists P[CAUSE_{w,t}(\lambda w' \lambda t'.P_{w',t'}(Sally),$
$\lambda w'' \lambda t''.\ BECOME_{w'',t''}\ (\lambda w^{**} \lambda t^{**}.\ again_{w^{**},t^{**}}$
$(\lambda w^* \lambda t^*.\ open_{w^*,t^*}\ (the\_door)))]$
b. There was an action of Sally's that caused the door to become once more open.

Note that the decomposition strategy is independent of principle (R) and the syntactically complex accomplishments. According to this theory, we might expect the crosslinguistic behaviour of *again* with lexical accomplishments to be different from its behaviour with syntactic accomplishments.

## 4.2 Crosslinguistic Data

### 4.2.1. Methodology

We obtained data from the following fourteen languages concerning availability of a restitutive reading of *again*: English, French, German, Hebrew, Hindi/Urdu, Labrador Inuttut (an Eskimo-Aleutian language of the Inuktitut family), Japanese, Khmer, Korean, Lingala (a Bantu language spoken in the Democratic Republic of Kongo), Mandarin, Russian, Serbian/Croatian and Spanish.

We contrasted lexical accomplishments with goal-PP constructions. We will report the results we obtained for the two predicates given in (47) below; the

construction of these predicates turned out to be the most stable across the languages we tested. That is, they all seem to translate (47a) with a lexical accomplishment verb and (47b) with a goal-PP construction.

(47) a. open the door
b. walk to the village

The predicates were tested in (minor variations of) the translations of the following two sentences:

(48) a. Sally opened the door again.
b. Suresh walked to the village again.

We checked the availability of the restitutive reading by presenting our informants with (minor variations of) the two stories given below. Each story contains one of (48a,b). In both stories, the only reading of the sentence in question that makes the story coherent is the restitutive one. If an informant accepts the crucial sentence in the story, this means that s/he gets the restitutive reading for that sentence. If the story is rejected on the basis of that sentence, a restitutive reading is unavailable.

(49) *open the door again*

Sally built a wardrobe. The last thing she made was the door. She set it on its hinges and it looked fine. But when she closed the door, it didn't quite fit. So *she opened it again* and took it off to sand the edges.

(50) *walk to the village again*

Suresh was born in a tiny village on a mountain top in Nepal. It is accessible only by a footpath through the mountains. He left the village for the first time when he was ten, and went to a school in the city for twelve years without going home. *He only walked to the village again* when he was 22.

Below we provide the actual sentences for which the judgements are reported.[5]

French:

(51) Sally a ouvert de nouveau la porte.
Sally has opened again the door

(52) Jean a marché de nouveau au sommet.
Jean has walked again to-the summit

German:

(53) Sally hat die Tür wieder geöffnet.
Sally has the door again opened

(54) Suresh ist wieder zum Dorf gelaufen.
Suresh is again to-the village walked

Hebrew:

(55) Dan patax et ha-xalon me-xadaS.
Dan opened Object-marker the-window again

(56) Dan halax el ha-kfar me-xadaS.
Dan walked to the-village again

Hindi/Urdu:

(57) Sally ne phir se daarwaazaa khol-aa
Sally.F.Sg Erg again Inst door.M.Sg.Nom open-perf.M.Sg

(58) Veneeta phir gaun k-i taraf chal-ii.
V~.F.Sg.Nom again village.M.Sg Gen-F.Sg towards walk-Perf.F.Sg

[5] We encouraged our consultants to choose whichever word order worked best for them. In case the language had several words that could mean *again*, we also encouraged them to choose the one that was most likely to permit restitutive readings. We insisted on the choice of verb and the use of *again*. The sentences presented in the paper are the ones that the majority of our consultants for that language liked best.

Inuttut:

(59) Holda ukuamik ukuisi-gialla-juk.
Holda door open-again-3sAGR

(60) Suresh KakKaup kaangaanut pisu-gialla-juk.
Suresh mountain's top walk-again-3sAGR

Japanese:

(61) Sally-ga futatabi doa-o aketa.
Sally-Nom again door-Acc opened

(62) Suresh-ga futatabi mura-made aruita.
Suresh-Nom again village-to walked

Khmer:

(63) Sally baek tvi:e(r) veñ.
Sally open door again

(64) Suresh dae(r) tiu phu:m(i) veñ.
Suresh walk go/to village again

Korean:[6]

(65) Sally-nun mun-ul tasi yel-ess-ta.
Sally-Top door-Acc again open-Past-Decl

[6] For Korean and Mandarin we report two goal–PP constructions, because we had to double–check the judgements we received for the first one. In Korean, we obtained unclear results because of a translation mistake: Notice *run* vs. *walk*, which does not fit the story very well. This was remarked on by two out of five consultants. The suspected source of the mistake is that our primary Korean consultant speaks standard German, while the first author does not. In Mandarin, the story with the first sentence was rejected by one of the three consultants, and judged somewhat awkward by a second, for reasons that seem to come from discourse coherence. We judge these reservations to be irrelevant to the availability of the restitutive reading, and report the judgements we received for the second goal-PP example, which were completely clear and unanimous.

(66) a. Suresh-ka tasi maul-lo tallie ka-(a)ss-ta.
Suresh-Nom again village-Dir run go-Past-Decl
b. Sae-tul-i tasi tungchi-lo nal-a ka-(a)ss-ta.
bird-Pl-Nom again nest-Dir fly go-Past-Decl

Lingala:

(67) Sally akangoli ekuke lisusu.
Sally open.3rd.Sg.F.Past door again

(68) Suresh atamboli na mboka lisusu
Suresh walk.3rd.Sg.M.Past (to) home again

Mandarin:

(69) Sally you$^{4}$ kai$^{1}$ le men$^{2}$.
Sally again open Perf. door

(70) a. Suresh you$^{4}$ zou$^{3}$ dao$^{4}$ na$^{4}$ge cun$^{2}$zi qu$^{4}$ le.
Suresh again walk to that village go Perf.
b. Xiao$^{3}$ niao$^{3}$ you$^{4}$ fei$^{1}$ jin$^{4}$ le niao$^{3}$ chao$^{2}$.
little bird again fly into Perf. bird nest

Russian:

(71) Sally opjat' otkryla dver.
Sally again opened door

(72) Suresh opjat' prishel v derevnju.
Suresh again Perf.walked to village

Serbian/Croatian:

(73) Sally je ponovo otvrila vrata.
Sally Aux again opened door

(74) Ponovo je odpesacio u selo.
again Aux Perf.walked.3rd.Sg to village

Spanish:

(75) Sally la abrió otra vez.
Sally it opened again

(76) Suresh anduvo hasta la aldea otra vez.
Suresh walked to the village again

4.2.2. Results

The results of our investigation are summarized in Table 2.[7] Let us first discuss the results we obtained for restitutive readings with lexical accomplishments. It is interesting that, contrary to what one might have expected from the literature on the subject, restitutive readings were not universally accepted. However, in the column for lexical accomplishments, the table reflects the judgement given for 'open the door again'. It does not reflect the judgements that we received in response to our 'walk to the village again' example, where many informants replaced 'walk' with 'return', and then judged the resulting sentence appropriate in the story. This was true of Japanese (where informants chose to translate 'walked' as *kaetta*), Mandarin (*xui*), Lingala (*jonga*) and Serbian/Croatian (*vrati*). The only language for which we have no evidence that restitutive readings are possible is Inuttut. Thus, we believe that restitutive readings with *again* are acceptable in almost all our languages at least with some verbs, for at least the majority of speakers. Obviously, they are available much more widely with lexical accomplishments than with goal PPs, and do not pattern with the setting of the resultative parameter.

[7] The judgements for English and German are drawn from the literature. Hence, Column B is left blank for these languages. The following judgements are not reflected in this table: One informant each for Korean and French rejected the restitutive reading of 'open the door again', and one informant for Serbian/Croatian accepted the restitutive reading of 'walk to the village again'. We will ignore these.

*Table 2: Results for Restitutive Again*

| **A** | **B** | **C** | **D** | **E** |
|---|---|---|---|---|
| English | | + | ok | ok |
| German | | + | ok | ok |
| Japanese | 7 | (+) | % (4 acc., 3 rej.) | % (4 acc., 3 rej.) |
| Khmer | 1 | + | ok | ok |
| Korean | 5 | + | ok | ok |
| Mandarin | 3 | + | % (1 acc., 2 ??) | ok |
| | | | | |
| French | 3 | – | ok | * |
| Hebrew | 5 | – | ok | * |
| Hindi/Urdu | 5 | – | % (3 acc., 2 rej.) | * |
| Inuttut | 2 | – | * | * |
| Lingala | 1 | – | * | * |
| Russian | 5 | – | ok | % (3 acc., 2 rej.) |
| Serbian/Croat. | 5 | – | % (2 acc., 3 rej.) | * |
| Spanish | 7 | – | ok | * |

(**A**=Language, **B**=Number of Consultants, **C**=Availability of Principle R, **D**=Availability of Restitutive Reading with Lexical Accomplishment, **E**=Availability of Restitutive Reading in Goal-PP Construction)

Let us now turn to our results for goal PPs, which are very clear except for Japanese and Russian, where our consultants simply disagreed. With Japanese it is clear (after following up on the judgements offered) that there is genuine variation between speakers, which has been reported by Washio (1997) also for acceptability of a certain class of resultatives.[8] Thus, this is perhaps not too surprising, and fits the general picture. With Russian the situation is less clear; in particular, we have not been able to ascertain whether there is genuine variation or whether this is simply a murky area for

[8] For example, Washio reports that out of 100 speakers consulted, nine accepted (i) below, forty–nine judged it unacceptable, and the remainder considered it marginal, but perhaps not totally ungrammatical.

(i) John-ga kinzoku-o petyanko-ni tatai-ta.
John-Nom metal-Acc flat pound-Past
'John pounded the metal flat.'

Russian speakers' intuitions. Since Russian seems clearly to have the negative setting of the resultative parameter, we note that it is a potential problem for us, but we are unable to do anything about it at this point. We will ignore Russian in the rest of the paper, as we do not have clear evidence either way.

Other than that, the languages under investigation come apart into the (R) languages vs. the (R)-less languages very cleanly in this test. The (R)-less languages, and only those, do not allow a restitutive reading with a goal-PP construction. How likely is it that this degree of association would be observed simply by chance, if in fact the availability of a restitutive reading were independent of the (R)-status of the language? The probability can be calculated by a standard statistical method, the Fisher Exact Test. Considering the twelve languages for which we have clear results, five languages were positive for both characteristics, seven were negative for both, and there were no mixed outcomes. The Fisher Exact Test assigns a probability of $p$=.001 to this result. In other words, the probability of obtaining this degree of association simply by chance is one in a thousand.

A possible worry might be that some of the languages in this study are fairly closely related to one another. Among the twelve languages we are currently considering are six Indo-European ones (English, French, German, Hindi/Urdu, Serbian/Croatian and Spanish). Note that the availability of (R) divides the Indo-European languages by language family. Thus it might make more sense to count the language families and consider those six languages as the Germanic languages versus the Romance and Slavic languages and Hindi/Urdu, counting the evidence from English and German only once and similarly for French and Spanish. This leaves us with ten language families/languages, for which we still find the association of (R) and the restitutive reading at a significant level. (Four language families are positive for both, and six are negative for both, with no mixed results; this yields a probability $p$=.005, or five chances in a thousand, by Fisher Exact Test.) We conclude that the behaviour of restitutive *again* corresponds to the availability of resultatives, and provides further evidence for the proposed parameter.

### 4.3 Interpretation: No Result State Available in (R)-less Languages

Let us think about the theoretical consequences of our results regarding the interpretation of goal-PP constructions. The case of (R)-languages is clear: We have given a derivation of the two readings of 'Sally walked to the summit again' in Section 4.1. This is what we propose happens in all (R)-languages. Given that we observe a perfect correspondence of (R) and restitutive readings, unavailability of (R) must be sufficient to lead to unavailability of a restitutive reading. The question, then, is how the lack of (R) leads to the unavailability of that reading. On Stechow's theory, a restitutive reading is possible if *again* can modify a result state. Thus, our crosslinguistic results imply that in (R)-less languages, there is no result state accessible to *again* in goal-PP constructions. This subsection is a discussion of how we can design an appropriate semantics for goal-PP constructions that has this property. We should stress that the discussion is by no means complete.

Informally speaking, our idea for what goes on in (R)-less languages like Spanish is this: In (R) languages, the predicate 'walk to the village' makes available at least two different eventualities: the accomplishment predicate as a whole, and the result state of being at the village. In (R)-less languages, however, there is only one eventuality that could have happened again: walking to the village (whatever the exact meaning of that predicate is). (R) enables one to interpret 'to the village' as the description of an independent event. Lacking (R), the goal PP can only be a regular modifier, and we do not expect an ambiguity any more than we do with 'walk in the park'.

We followed Stechow's (1995) formal theory, which does not introduce eventualities (but compare Stechow 1996). Instead of modifying a property of events (as in our informal description above), *again* modifies a proposition, in this theory. Translating our idea for what goes wrong in (say) Spanish into this framework could look like this: *Again* applies to a proposition. Interpreting 'to the village' in Spanish as a proposition results in uninterpretability, due to lack of (R). The goal PP must be a modifier (say, type $\langle\langle e,\langle s,\langle \tau,t\rangle\rangle\rangle,\langle e,\langle s,\langle \tau,t\rangle\rangle\rangle\rangle$). The only proposition to which *again* can apply is the whole proposition 'Suresh walk to the village'.

This leaves open the question of what modifier precisely 'to the village' denotes, and how it comes about that the interpretation of the simple

sentence 'Suresh walked to the village' seems so similar in Spanish and English. (After all, it was only the behaviour of 'in two hours' and restitutive *again* that made us suspect that there was any difference at all.) We tentatively suggest (77). (This is specifically for Spanish; we have not tried to determine the precise meaning for every (R)-less language, and there might be some variation.)

(77) [[to the village]](P)(x)(w)(t)=1 iff P(x)(w)(t)=1 &
x is at the village at rb(t) in w.

(78) [[Suresh walk to the village]](w)(t)=1 iff
Suresh walks in w at/during t and Suresh is at the village
in w at the end of t.

Thus (78) means that Suresh walks and ends up at the village, which seems appropriately similar to English. The difference between *to* and *at*, in either Spanish or English, would be that *to* makes reference to the temporal endpoint, so *at* could look like (79):

(79) [[at the village]](P)(x)(w)(t)=1 iff P(x)(w)(t)=1 &
x is at the village at/during t in w.

The change in the semantics of *to* is compatible with our story about English; we simply change 't' to 'rb(t)' wherever we gave a semantics for *to*. In (80), below, is the reformulation of (14).

(80) Sally walked to the summit $\rightarrow$
$\lambda w \lambda t.\ \text{CAUSE}_{W,t}\ (\lambda w' \lambda t'.\ \text{walk}_{W',t'}\ (\text{Sally}),\ \lambda w'' \lambda t''.$
$\text{BECOME}_{W'',t''}\ (\lambda w^* \lambda t^*.\ \text{at}_{W^*,\text{rb}(t^*)}\ (\text{the\_summit})\ (\text{Sally}))$

The crucial difference, in our view, between English and Spanish is that in English a prepositional phrase can denote a proposition, while in Spanish it cannot. Yet, it does not follow that we have to use *to* and not *at* in an English goal-PP construction. At present we have no explanation for the impossibility of *at* in a goal-PP construction.

This is a possible analysis of goal PPs that would indeed preclude modification by *again*. We would like to stress that the crucial aspect of our

suggestion is that the goal PP in 'walk to the summit' is treated in an analogous way to the PP in (81).

(81) Sally walked in the park again.

Example (81) is unambiguous; in particular, (82) is not a possible reading.

(82) Sally walked, and she was once more in the park.

This reading would come about if *again* could modify just the PP 'in the park'. This is impossible. We suggest that 'to the summit' in Spanish (78) has the same semantic status as 'in the park' in (81). It is worth stressing this point because technically our explanation is that there is a simple type mismatch, and type mismatches can be overcome in a number of ways. Example (81) shows that we do not want to do this in the present case: PP modifiers cannot in general be modified by *again*. If 'to the summit' is simply a PP modifier, we expect that it cannot be, either.

There is one more possibility for deriving a restitutive reading for goal PPs that we should consider. (Thanks to an anonymous referee for pointing this out to us.) Rapp and von Stechow (1999) propose a decomposition analysis of PPs with *to* that is very similar to the decomposition discussed above for verbs like *open*.

(83) to = BECOME + at

(84) to the summit = BECOME [PP at [the summit]]]

This decomposition makes available a result state 'at the summit'. It is thus incompatible with our crosslinguistic results. We can think of two reasons why such a decomposition should be impossible: One possibility is that decomposition is unavailable for prepositions, in contrast to verbs (contra Rapp and von Stechow). Alternatively, decomposition could result in a type for the PP that leads to uninterpretability, due to a type mismatch. Note that our BECOME operator yields a proposition (type $<s,<\tau,t>>$) which does not combine with *walk*. Either way, our empirical results imply that this decomposition analysis is not available in (R)-less languages.

Finally, the story on goal PPs in (R)-less languages should lead to an explanation for the ill-formedness of temporal modifiers such as 'in two hours'. We speculate that the absence of BECOME is responsible. Dowty (1979) observes that 'in two hours' not only requires that there be a unique culmination point in the extension of the predicate with which we combine 'in two hours', but moreover it must be guaranteed by the semantics that this is so (independent of the actual facts). This is true in English because of the presence of BECOME, but not in Spanish. (Suresh only needs to end up at the village, but it does not follow from the semantics that this has to be the unique point of reaching it.)

# 5. Conclusion

Our research has brought together results from work by von Stechow and Snyder, and has found confirmation of important aspects of both. Our obvious conclusion is that we have supported the parameter proposed in Snyder (1995, 2000), because we found another test which divides languages into the same two groups. Moreover, our results support Snyder's intuition that the parameter is about the formation of accomplishments in the syntax, by combining an activity with a result state. The parameter has effects on an interpretational level: Goal-PP constructions are well-formed, but they are not interpreted in the same way in languages lacking (R). This shows that the resultative parameter is not purely structural, excluding resultatives by ruling out certain structures morphosyntactically.

Our proposal places the parameter in the interpretation component (availability of a principle of composition). This has consequences for both grammaticality and interpretational possibilities, which is more adequate for our case. We thus conclude that we have found a semantic parameter. We do not mean by this that there is variation as to what meanings a language can express, but that there is variation with respect to how a language can express a certain interpretation. Having or not having (R) is a parameter of compositional interpretation.

We believe that we have also found support for an important feature of Stechow's theory of restitutive *again*: There must be a linguistic expression corresponding to the result state of an accomplishment for the restitutive

reading of *again* to be possible. It is not sufficient that there is conceptually a culmination point to the event described in a sentence. That is obviously the case in Spanish etc., where speakers assure us that for Suresh to have walked to the village he needs to have ended up there. What is lacking is a semantic object corresponding to that result state which *again* could operate on. If this reasoning is sound, it lends support to Stechow's approach of doing decomposition in the syntax. Certainly, we have found support for another aspect of his (1995) theory: giving a different analysis to lexical accomplishments than to syntactic accomplishments. Restitutive readings are accepted much more widely with lexical accomplishments than with goal-PP constructions. An interesting question is to what extent they are possible universally. Inuttut suggests that decomposition might not be universally available, although this remains to be tested with a larger set of data. We will have to leave this question for future research.

This paper raises a few other questions, besides the one about universality of restitutive readings. One concerns the semantic nature of goal PPs, which we have not discussed exhaustively by any means. We have yet to tie in our results with work on paths (e.g. Krifka 1986, 1998). Another issue is compatibility with alternative theories of restitutive *again* (in particular Fabricius-Hansen 1983 and Fabricius-Hansen, this volume) and alternative semantic theories of resultatives (for example Rothstein, to appear). Finally, there is the more general question of decomposition adverbs and their parameters (Rapp & von Stechow 1999). We hope to be able to address at least some of these issues in future work.

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