
SYNTACTIC AND LEXICAL CAUSATIVIZATION: BECOME AND CAUSE AGAIN

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1. CLAIMS OF THIS TALK

- There is decomposition in the syntax for some inchoative and causative verbs like *aufwachen/aufwecken* ‘wake up’ itr/tr, *öffnen/sich öffnen* ‘open’
- There is no decomposition in the syntax in resultative constructions involving small clauses, goal PPs. These are treated by means of a lexical operation CAUSE*, called **Principle R** in (von Stechow, 1995). It depends on the formulation of that principle whether control is involved or not.
- The reason for decomposition comes from different readings generated by the adverb **wieder** ‘again’. In my approach this adverb expresses pure repetition and the different readings are accounted alone in terms of scope.
- A recent important challenge comes from Jäger & Blutner; cf. (Jäger and Blutner, 2000, Jäger and Blutner, 2003). They argue that decomposition in the syntax is not possible in causative constructions that involve subject or object control. Otherwise, the so-called unspecific restitutive reading (UR) cannot be generated. J & B conclude that there is no decomposition in the syntax at all.
- If face the criticism. J&B’s counter example can easily be explained. More serious problems arise with construction involving secondary predication. Appropriate formulations of Principle R can deal with most of these.
- The talk presents a theory of decomposition triggering. Decomposition in the syntax is triggered by a stative verb that has the uninterpretable feature [u-CAUSE], which must checked against the interpretable feature [i-CAUSE]. Result phrases have the u-feature as well. They check against a lexically causative verb for type reasons. I am relying on the theory of features in (Zeijlstra, 2004). Secondary predicates have the feature [u-CAUSE] as well and trigger lexical causativization.
- The discussion is based on an explicit compositional semantics for all examples discussed.

2. WHY SYNTACTIC DECOMPOSITION?

The motivation comes from the adverb **wieder** ‘again’, which expresses repetition.

With states and activities **wieder** expresses plain repetition:

- (2-1) Eva was asleep again
Eva was asleep; she had been asleep before

Accomplishments/achievements are ambiguous: **wieder** may describe the repetition of the action (*repetitive reading*) or the repetition of the result state (*restitutive reading*):

- (2-2) weil Eva wieder AUFwachte ,Eva woke up again’
Eva woke up; she had been awake before restitutive
- (2-3) weil Eva WIEDER aufwachte ,Eva woke up again’

Eva woke up; she had woked up before repetitive

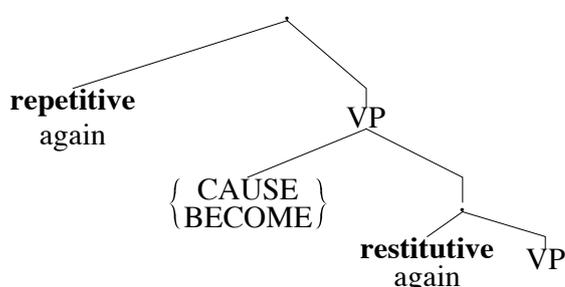
The crucial contrast:

- (2-4) a. weil der Fritz die Eva wieder aufweckte ambiguous: repetitive/restitutive
 because Fritz (nom) Eva (acc) again waked up
 b. weil der Fritz wieder die Eva aufweckte unambiguous: only repetitive

If a definite direct object has wide scope with respect to **wieder** ‘again’ at s-structure, the sentence is ambiguous between repetitive/restitutive. If a definite object has narrow scope with respect to **wieder**, the sentence is unambiguously is restitutive.

One aim of the talk: I will deduce the contrast from the assumption that the German/English sentence may have the following syntactic structure, where CAUSE and BECOME are unpronounced verbs.

(2-5) The theory



The theory has been accepted by some and challenged by some. The most serious criticism is due to Jäger & Blutner. This talk will defend the theory.

3. TOPICS TO COME

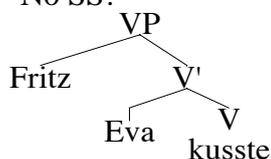
- Scrambling in German: Definite DPs scramble out of the VP
- Derivation of the crucial contrast in German
- Semantics and feature checking
- The decomposition analysis of **aufwachen/aufwecken**
- The decomposition analysis of goal PPs
- Remarks on the literature
- Jäger’s criticism
- Small Clauses and Result PPs with control: Principle (R)
- Summary

4. SCRAMBLING IN GERMAN

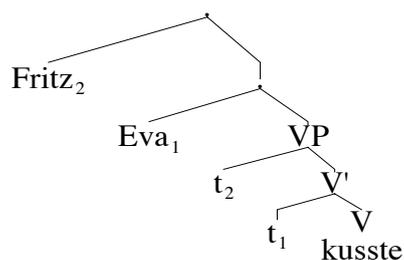
- **The definiteness constraint (DefC):** A definite DP is not in the VP at s-structure (SS), i.e. definites are scrambled out of the VP at SS.

(4-1) weil Fritz Eva küsste

(4-2) No SS!



(4-3) A good SS:



Assume some functional projection above VP, say TP. This projection provides the landing site for Scrambling. The precise nature of this projection is not important here.

5. DERIVING THE CRUCIAL CONTRAST

The functional adverb **wieder** modifies the VP. Simplex verbs have one VP projection and therefore only one reading.

(5-1) Simplex verbs:

Fritz₂ Eva₁ [**wieder** [VP t₂ t₁ kusste]] unambiguous

Decomposed consists of two VPs and have two positions for **wieder**: the higher is the repetitive, the lower is the restitutive one.

(5-2) Decomposed verb with object above **wieder**: ambiguous

a. Fritz₂ Eva₁ [VP t₂ CAUSE [**wieder** [VP t₁ aufweckte]]] restitutive

b. Fritz₂ Eva₁ [**wieder** [VP t₂ CAUSE [VP t₁ aufweckte]]] repetitive

Since CAUSE is covert, there are two positions for **wieder**, which generate the ambiguity.

If the object is in the scope of **wieder**, we only have the repetitive reading.

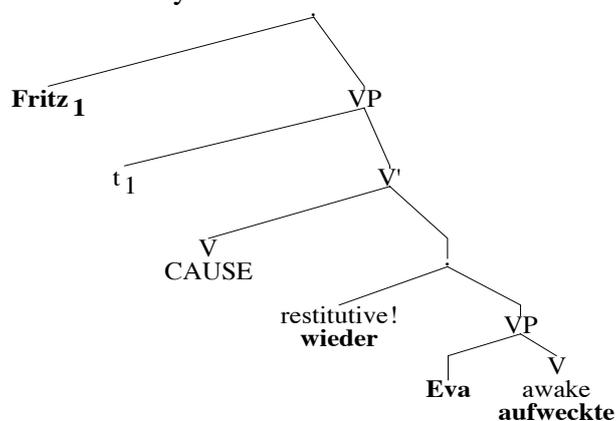
(5-3) Decomposed verb with object below **wieder**: unambiguous

Fritz wieder Eva aufweckte

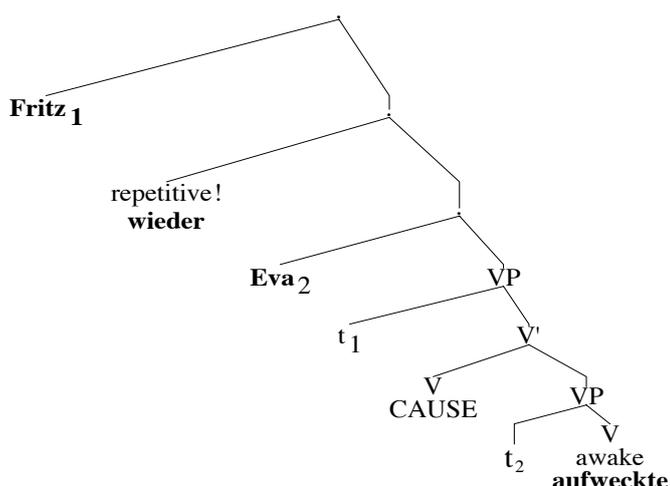
Fritz again Eva waked up

Eva could not be under CAUSE, because then it would be in the VP.

(5-4) SS barred by DefC: **Eva** in VP



(5-5) SS satisfying DefC: repetitive only!



Being a name, **Eva** has no semantic scope, i.e., **Eva** is interpreted at the position of its trace. Scrambling of definites has no semantic impact. It merely serves the purpose to identify the position of the adverb.

Beware: Indefinites under **wieder** may (marginally) have a restitutive reading. (Jäger & Blutner)

(5-6) Fritz öffnete wieder ein Fenster.
Fritz opened a window again

Scenario: Ede closed all the windows. Fritz opened a window.

6. SEMANTICS AND FEATURES

I am assuming the logical type e (individuals), t (truth-values), i (times) and s (worlds). Meanings are intensions. The lexicon is the basis for the recursive definition of the interpretation $\llbracket \cdot \rrbracket$, which depends on a variable assignment g (and a context c). The notational conventions follow (Heim and Kratzer, 1998). The semantics ignores aspect and events.

(6-1) Simplex verbs

a. **schief** : type $e(it)$, feature [u-PAST]

$\llbracket \text{schief} \rrbracket = \lambda w.\lambda x.\lambda t.x$ sleeps in w at t .

b. **küsste** : type $e(it)$, feature [u-PAST]

$\llbracket \text{küsste} \rrbracket = \lambda w.\lambda x.\lambda y.\lambda t.y$ kisses x in w at t .

(6-2) Names: **Fritz**, **Eva**,... : type e

$\llbracket \text{Fritz} \rrbracket = \lambda w.\text{Fritz}$ etc.

(6-3) Tenses : Type i , [i-PAST]

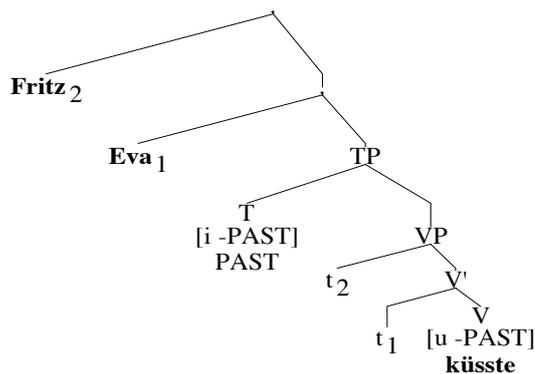
a. $\llbracket \text{PAST} \rrbracket^c = \text{Past}_c$, i.e. a particular past time determined by c

b. $\llbracket \text{PRES} \rrbracket^c = t_c$, i.e. the time of c

(6-4) *Feature checking*

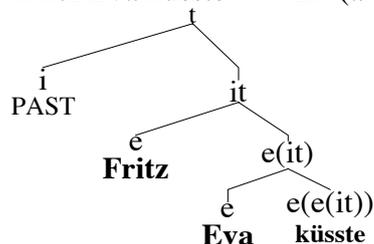
An uninterpretable feature [u-F] is checked against an interpretable feature [i-F] under c -command and locality conditions. Cf. (Zeijlstra, 2004).

(6-5) Fritz Eva küsste SS



In this configuration, [u-PAST] checks [i-PAST] under agreement (cf. (Zeijlstra, 2004) or percolation (Sternefeld, 2006)).

(6-6) Fritz Eva küsste LF (after reconstruction and deletion of uninterpretables)



‘that Fritz kisses Eva at Past_c’

(6-7) The 2 most important principles of composition

a. Exentensional functional application (EFA)

If α is a tree of type a with daughters β of type (ba) and γ of type b,
 $\llbracket \alpha \rrbracket = \lambda w. \llbracket \beta \rrbracket (w) (\llbracket \gamma \rrbracket (w))$.

b. Intensional functional application (IFA)

If α is a tree of type a with daughters β of type ((sb)a) and γ of type b,
 $\llbracket \alpha \rrbracket = \lambda w. \llbracket \beta \rrbracket (w) (\llbracket \gamma \rrbracket)$.

7. THE DECOMPOSITION ANALYSIS

(7-1) **Decomposition theory.** Decomposition is triggered by the lexicon. The most important covert heads are CAUSE and BECOME, which have the features [i-CAUSE] and [i-BECOME] respectively. A verb is a decomposition verb (*D-verb*), if it has the D-feature [u-CAUSE] or [u-BECOME].

Here are the relevant entries for the *Causative/Inchoative Alternation*.

(7-2) The inchoative **aufwachte** ‘woke up’: type e(it)

Features: [u-BECOME], ...

$\llbracket \text{aufwachte} \rrbracket = \lambda w. \lambda x. \lambda t. x$ is awake in w at t .

(7-3) The causative **aufweckte** ‘waked up’: type e(it)

Features: [u-CAUSE], ...

$\llbracket \text{aufweckte} \rrbracket = \lambda w. \lambda x. \lambda t. x$ is awake in w at t .

- The inchoative and the causative have the same meaning! They express the state of being awake. The difference in interpretation comes from the difference in D-features.

The repetitive adverb **wieder** expresses pure repetition¹:

- (7-4) **wieder** ‘again’: type (it)(it)
 $[[\text{wieder}]] = \lambda w. \lambda P_{it}. \lambda t. (\exists t')[t' < t \ \& \ P(t')]. P(t)$

(The information after the colon “:” is a presupposition.) BECOME has a simplified² Dowty meaning:

- (7-5) BECOME : type (it)(it)
 Feature: [u-BECOME]
 $[[\text{BECOME}]] = \lambda w. \lambda P_{it}. \lambda t. \neg P(\text{beg}(t)). P(\text{end}(t)).$

- (7-6) CAUSE : type (s(it))(e(it))
 Feature: [u-CAUSE]
 $[[\text{CAUSE}]] = \lambda w. \lambda P_{s(it)}. \lambda x. \lambda t. x \text{ causes in } w \text{ at } t [\lambda s'. P(s')(\text{end}(t))].$ ³

A. Analysis of *Eva wieder aufwachte* ‘Eva woke up again’

- (7-7) The repetitive reading
 SS: Eva_1 **wieder** [_{VP} BECOME [_{VP} t_1 aufwachte]]
 => (Reconstruction of subject)
 LF: **wieder** [_{it} BECOME [_{it} Eva aufwachte]]
 Eva woke up; she had woked up before
 Eva woke up; she had woked up before

- (7-8) The restitutive reading
 SS: Eva_1 [_{VP} BECOME **wieder** [_{VP} t_1 aufwachte]]
 => (Reconstruction of subject)
 LF: [_{it} BECOME **wieder** [_{it} Eva aufwachte]]
 Eva woke up; she had been awake before

B. Analysis of *Fritz Eva wieder aufweckte* ‘Fritz waked Eva up again’

- (7-9) The repetitive reading
 SS: $Fritz_2$ Eva_1 **wieder** [_{VP} t_2 CAUSE [_{VP} t_1 aufweckte]]
 => (reconstruction of subject and object)
 LF: [_{it} **wieder** [_{it} Fritz [_{e(it)} CAUSE [_{it} Eva aufweckte]]]]
 Fritz waked Eva up; he had waked up Eva before

- (7-10) The restitutive reading
 SS: $Fritz_2$ Eva_1 [_{VP} t_2 CAUSE **wieder** [_{VP} t_1 aufweckte]]
 => (reconstruction of subject and object)
 LF: [_{it} Fritz [_{e(it)} CAUSE [_{it} **wieder** [_{it} Eva aufweckte]]]]
 Fritz waked Eva up; she had been awake before

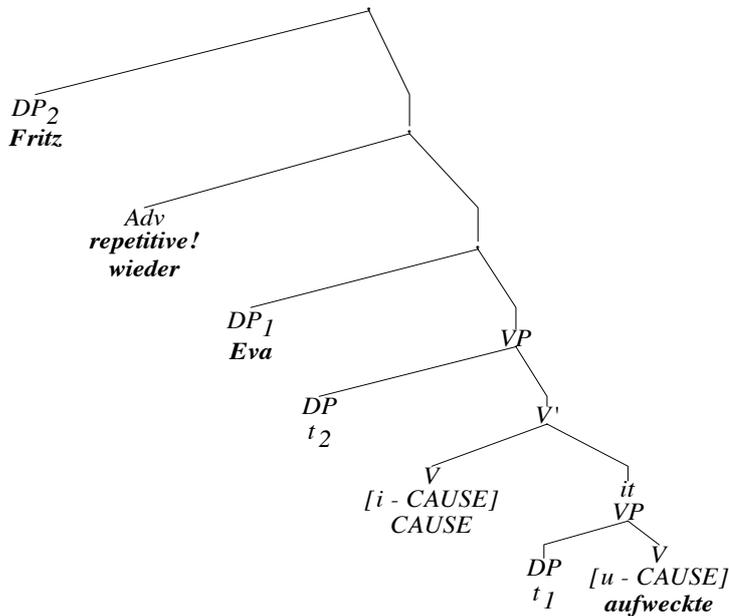
C. Analysis of the disambiguated reading *Fritz wieder Eva aufweckte*

- (7-11) S-structure

¹ This meaning is the conceptual basis for Dowty’s (1979) two meanings of the adverb. Presuppositions are represented in the style of (Heim and Kratzer, 1998).

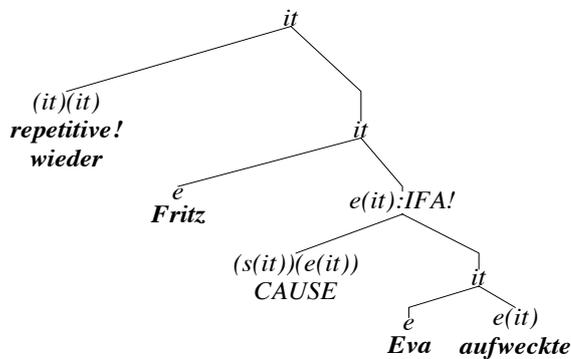
² Dowty assumes a rather complicated interval semantics.

³ “cause” can be further analysed in the style of Lewis and Dowty.



- **Eva** cannot be under restitutive **wieder** because then it would be in the VP! Hence the **wieder** in the sentence occupies the repetitive position.

(7-12) LF after reconstruction of subject and object



Fritz waked Eva up; he had waked her up before

7.1. Remark on Anticausatives

(7-13) weil sich die Tür wieder öffnete ambiguous

Lexical entries:

(7-14) **öffnete** type (e(it))

Features:

a. [u- BECOME], *DP*, *refl*

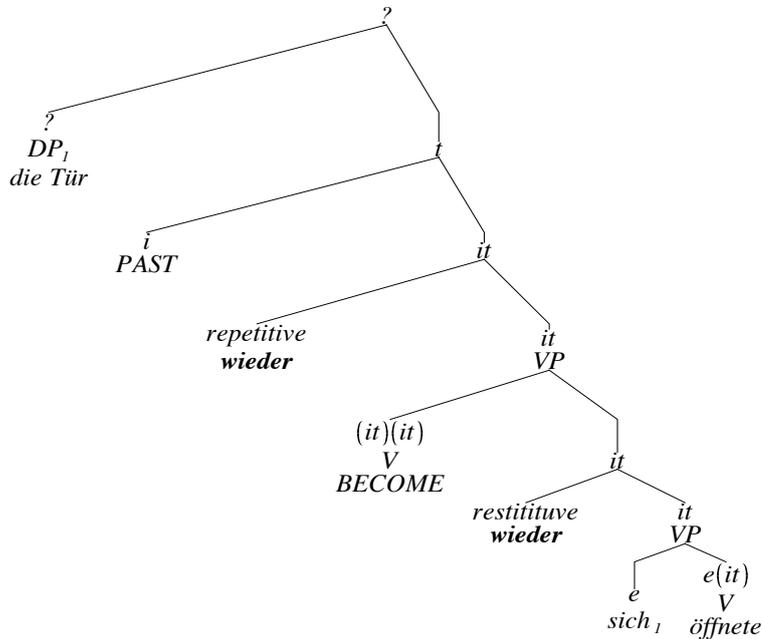
b. [u-CAUSE]

[[**öffnete**]] = $\lambda w.\lambda x.\lambda t.x$ is open in w at t .

The anti-causative is a reflexive verb. It selects a DP and a reflexive pronoun, but has only

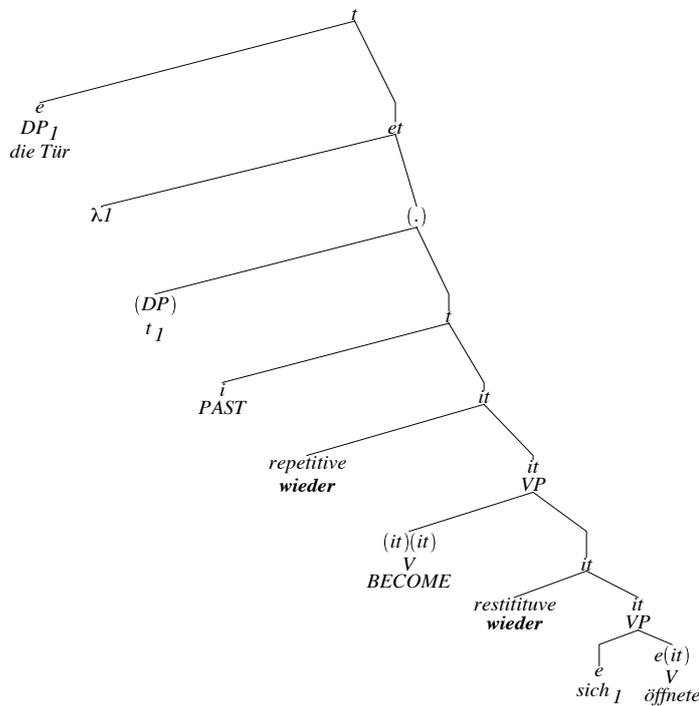
one thematic position. Cf. (Steinbach, 2002). The distribution of the reflexive and the DP is determined by the Binding Theory.

(7-15) weil die Tür sich (wieder) öffnete SS after reconstruction of scrambled **sich**



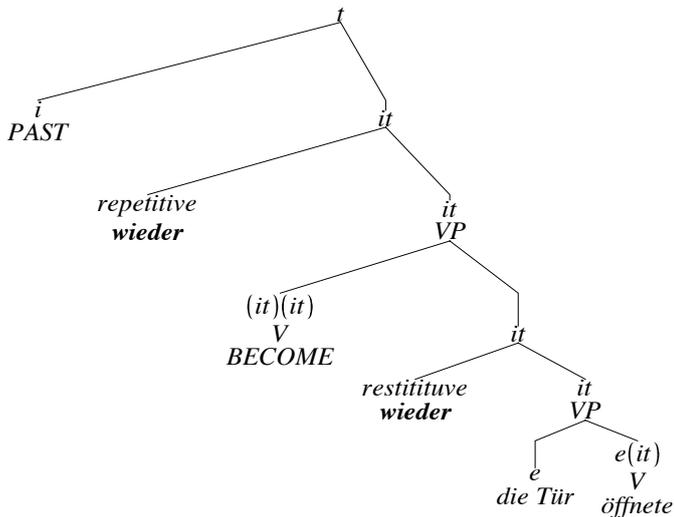
die Tür has no logical type (is not in a θ -position). Therefore, the DP has to be QR-ed at LF. The trace has no logical type and must be deleted by Full Interpretation:

(7-16) (weil) die Tür sich (wieder) öffnete LF



By λ -conversion, this is equivalent with:

(7-17) weil die Tür sich öffnet λ -reduct



8. GOAL PPs IN LOCATION VERBS

(8-1) *Stative/causative alternation in location verb*

- a. Die Katze lag auf dem Sofa 'the cat lay on the sofa'
- b. Eva legte die Katze auf das Sofa 'Eva laid the cat onto the sofa'
- c. Eva **wieder** die Katze auf das Sofa legte only repetitive

Location verbs are decomposed in the syntax:

- (8-2) a. die Katze₁ [_{l(it)}[_{l(it)} auf dem Sofa] [_{l(it)} t₁ lag]]
 b. Eva₂ die Katze₁ [_{tPAST} [_{t₂ CAUSE} [_{l(it)}[_{l(it)} auf das Sofa] [_{l(it)} t₁ legte]]]]
 c. Eva₂ **wieder** die Katze₁ [_{tPAST} [_{t₂ CAUSE} [_{l(it)}[_{l(it)} auf das Sofa] [_{l(it)} t₁ legte]]]]

(8-3) *Location verbs*

- a. **lag** : type l(e(it))
 [[**lag**]] = $\lambda w.\lambda l.\lambda x.\lambda t.x$ is lying at place l in w at t
 b. **legte** : type l(e(it))
 Features: [u-CAUSE]
 [[**legte**]] = [[**lag**]]

(8-4) *Locative/directional prepositions*

- auf** : type e(l(it))
 a. [[**auf**]] = $\lambda w.\lambda x.\lambda l.\lambda i.x$ is on l in w at t.
 governs Dative
 b. [[**auf**]] = same meaning
 Feature: [u-CAUSE]
 governs Accusative

Control constructions

- (8-5) Fritz ging wieder in den Keller (ambiguous)
 a. Fritz $\lambda x.x$ ging CAUSE **wieder** x in den Keller rest (see below)
 b. Fritz $\lambda x.$ **wieder** x ging CAUSE x in den Keller rep (see below)
- (8-6) Der Ball rollte wieder vom Tisch (ambiguous)
 a. der Ball $\lambda x.x$ rollte CAUSE **wieder** x von dem Tisch rest (see below)
 b. der Ball $\lambda x.$ **wieder** x rollte CAUSE x von dem Tisch rep (see below)
- (8-7) Harry zauberte Miriam wieder auf den Berg ambiguous
 weil Harry wieder Miriam auf den Berg zauberte unambiguous

Path-PP

- (8-8) Der Ball rollte **wieder** über den Teppich (only repetitive)
 The ball rolled again over the carpet
- (8-9) weil der Ball **wieder** über den Teppich an die Tür rollte (only repetitive)
 because the ball again over the carpet at the door rolled
- (8-10) weil der Ball über den Teppich **wieder** an die Tür rollte (ambiguous)
- (8-11) weil der Ball **wieder** über den Teppich **wieder** an die Tür rollte (outer repetition, inner ambiguity)

9. PREVIOUS ANALYSIS OF THE REPETITIVE/RESITITUTIVE AMBIGUITY

- Generative semantics McCawley etc.: wild syntax
- (Dowty, 1979): Reaction against wild syntax. Decomposition in the semantic pivot language but not in the syntax. Two different **again**'s related by a dubious meaning postulate (Zimmermann, 1999). No explanation of readings determined by the syntax (von Stechow, 1995).
- (Fabricius-Hansen, 1983), (Fabricius-Hansen, 2001) one **again** yielding sensitive to the meaning of the argument sentence. No derivation of disambiguation done by the syntax; no analysis of more complicated constructions.
- (Kamp and Rossdeutscher, 1994a); (Kamp and Rossdeutscher, 1994b). An axiomatic

approach in the DRT framework, describing many fact. No attempt to relate the readings to the syntax.

- (von Stechow, 1995), (von Stechow, 1996): the structural account underlying this talk.
- (Jäger and Blutner, 2000, Jäger and Blutner, 2003) The undergeneration argument; **again** is ambiguous; no compositional semantics; no analysis of more complicated construction. No account of lexical variation.
- (Beck and Johnson, 2004), (Beck, 2005) Extending the approach of von Stechow to double object constructions and marrying it with VP shell syntax.
- The present account: Building on (Beck and Johnson, 2004). Eliminating the BECOME-operator from causative constructions. Making precise lexical entries for decomposed verbs.

10. JÄGER & BLUTNER' CRITICISM

In a number of papers (Jäger and Blutner, 2000, Jäger and Blutner, 2003), Jäger & Blutner have put forward the following criticism (my wording):

- **J & B's criticism:** Causative verbs that have a control analysis may have an unspecific restitutive reading (= UR). Stechow's analysis predicts only a specific restitutive reading (= SR) is possible.

(10-1) *The critical example*

A Delaware settled in New Jersey again [16]

UR: A Delaware settled in NJ. A Delaware had lived in NJ before.

SR: A Delaware settled in NJ. He had lived in NJ before.

J&B assume that verbs like **settle** are causative. This entails that the causer (b) controls the subject x of the embedded VP. Hence the same Delaware must have lived in NJ before. But this need not be so. The presupposition rather is that some Delaware had lived in NJ before. J&B's claim follows if the analysis of the restitutive reading is this:

(10-2) My analysis according to J&B:

A Delaware₁ CAUSE again [PRO₁ settled in NJ]

My reaction to *this* example: **settle** is not causative but an intransitive BECOME-verb:

(10-3) **settled in NJ** : type e(it)

Features: [u-BECOME]

[[**settled in NJ**]] = $\lambda w. \lambda x. \lambda t. x$ settles in NJ in w at t.

(10-4) **SS: a Delaware₁ BECOME** again [VP t₁ settles in NJ]

=> reconstruction of subject

LF: BECOME **again** [VP a Delaware settles in NJ]

- Jäger's criticism provides a criterion of adequacy for decomposition theory: If there are causative constructions that require control of the result state, we have an undergeneration problem.

11. SECONDARY PREDICATION

- This section gives an analysis of the SR/UR-reading in resultative constructions where the result phrase is AP, PP, NP or VP (= double object, *give*).

- Each case is analysed by von Stechow's (1995) *Principle (R)*, a lexical rule of causativization.
- The derivation of the UR-reading requires a lifted version of Principle (R). The application of the principle is constrained to 'very light' indefinite DPs.

11.1. The constructions

The following examples are taken from (Beck and Johnson, 2004). I basically follow their account.

(11-1) *The result phrase is AP* (small clause)

Olga painted a chair red again

UR: Olga painted a chair red. There had been a red chair before.

SR: Olga painted a chair red. This chair had been a red chair before.

(11-2) *The result phrase is PP* (motion verbs)

Thilo kicked a ball onto the field again

UR: Thilo kicked a ball onto the field. There had been a ball on the field before.

SR: Thilo kicked a ball onto the field. This ball had been a ball on the field before.

(11-3) *The result phrase is NP* (verbs of creation)

Thilo sewed a flag again

UR: There had been a flag before

SR: \checkmark

(11-4) *The verb give*

Thilo gave Satoshi a map again.

UR: Thilo had had a map before

SR: \checkmark

- Definiteness constraint in German: Again, a definite term in the scope of **wieder** makes the sentence unambiguously repetitive.

- (11-5)
- | | | |
|----|--|------------|
| a. | Olga hat wieder diesen Stuhl rot angestrichen. | repetitive |
| b. | Thilo wieder den Ball ins Tor geschossen. | “ |
| c. | Thilo hat wieder diesen Kuchen gebacken. | “ |
| d. | Thilo hat wieder Satoshi diese Karte gegeben. | “ |

11.2. Failure of Syntactic Control Analysis

(11-6) *Result AP*

SS: Olga painted a chair_i CAUSE [[PRO_i red] again]

LF: a chair λ_1 Olga painted t_i CAUSE [[PRO_i red] again] (SR \checkmark , UR*)

(11-7) *Motion verbs*

SS: Thilo kicked a ball_i CAUSE **again** [PP PRO_i onto the field]

LF: a ball λ_1 Thilo kicked t_i CAUSE **again** [PP PRO_i onto the field] (SR \checkmark , UR*)

- The control analysis only generates the SR-reading. For the verb *give* and other double object constructions, it is not even clear what the analysis of SR should be.

(11-8) *Verbs of creation*

Thilo sewed a flag_i CAUSE **again** [PRO_i EXIST] (SR \checkmark , UR*)

(11-9) Thilo gave Satoshi a map again.

Control analysis ???

Conclusion: Decomposition in the syntax is not viable for these constructions.

(von Stechow, 1995) introduces a lexical causativizer called:

(11-10) *Principle (R)*⁴

Let R have the type $s(e(\dots(e(it))\dots))$ (R has n many e arguments)

$[[\text{CAUSE}]] =$

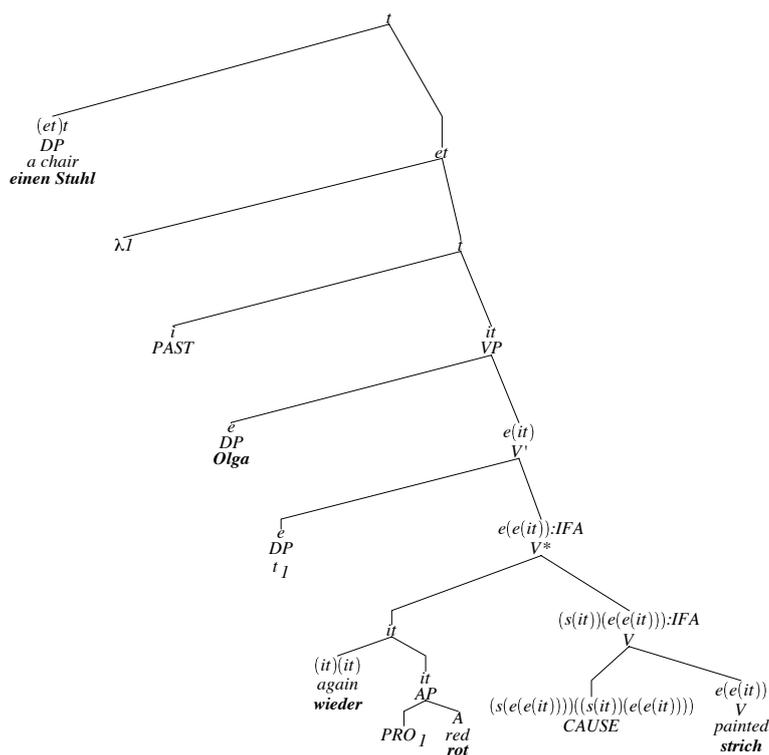
$\lambda w.\lambda R.\lambda Q_{s(it)}.\lambda y_1\dots\lambda y_n.\lambda t.[\lambda w'.R(w')(y_1)\dots(y_n)(t)]$ causes in w at t
 $[\lambda w'.Q(w')(end(t))]$

CAUSE has the feature [i-CAUSE]

The rule presupposes that the PRO_i in the SC is a referential pronoun that is bound in the syntax via QR (syntactic control):

(11-11) LF for the the 1995-analysis

(weil) Olga einen Stuhl wieder rot strich



Olga painted a chair red; this chair had been red before.

The UR-reading cannot be derived. So J&B's criticism against this account is justified.

⁴ Adapted to this framework without events.

11.3. A Predicative Analysis?

Idea: The surface object of the verb is not an argument of the verb, but the subject of the result clause.⁵

(11-12) Olga strich zwei Stühle rot
Olga painted CAUSE [AP two chairs red]

A restitutive reading?

(11-13) Olga hat wieder 5 Stühle rot gestrichen
Olga painted 5 chairs red again

S. Beck's objection: 5 chairs were red. Cecile painted two of them green. Then Olga came and painted the two red again. The sentence cannot describe this situation.

Another problem for the predicative analysis (Doris Penka)

(11-14) Ben drückte die Bombe zur Explosion
Ben pushed CAUSE [die Bombe zur Explosion]

Scenario: Ben pushed something, say a bottom on the bomb. And this caused the bomb to explode. The sentence cannot describe this situation.

Another difficulty: Obvious entailments cannot be deduced

(11-15) Olga strich zwei Stühle rot → Olga strich zwei Stühle
Olga painted two chairs red → Olga painted two chairs
Thilo kickte den Ball auf den Platz → Thilo kickte den Ball
Thilo shot the ball onto the field → Thilo shot the ball
Ben drückte die Bombe zur Explosion → Ben drückte die Bombe
Ben pushed the bomb to explosion → Ben pushed the bomb

Conclusion: The predicative analysis is not viable. The control analysis is correct. (But there remain problems; see below.)

11.4. Revision of Principle R: Lexical Control

Idea for the revision:

- Following (Heim and Kratzer, 1998) I assume that PRO is semantically empty and must be moved for type reasons. Hence SCs have the type e(it).
- Control is then built into the rule R.
- For “small” indefinite DPs there is a type lifted version of the rule R.

(11-16) Principle (R) with lexical control

Let R have the type $s((e(\dots(e(it))\dots))$ (R has n many e arguments)

[[CAUSE]] =

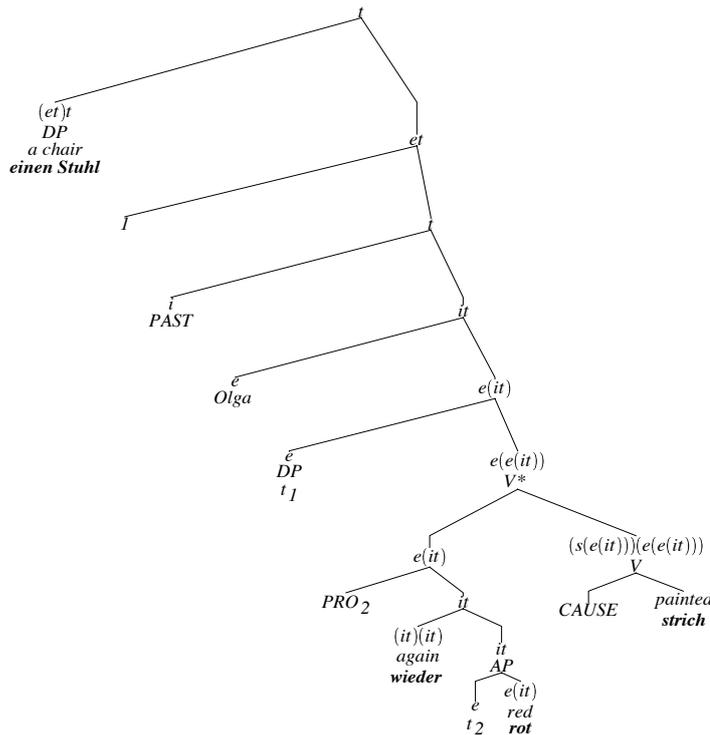
$\lambda w.\lambda R.\lambda Q_{e(sit)}.\lambda y_1.\lambda y_2.\dots.\lambda y_n.\lambda t.\lambda w'.[\lambda w'.R(w')(y_1)(y_2)\dots(y_n)(t)]$ causes in w at t
[$\lambda w'.[Q(w')(y_1)(end(t))]$]

⁵ A. Alexiadou (p.c.) claims that (Embick, 2002) and (Alexiadou et al., 2005) have a viable analysis of this kind. I am not sure that I understand Embick's semantics, and the second paper gives no explicit semantics. I have to check that in more detail. There remain points in favour of this analysis.

CAUSE has the feature [i-CAUSE]

- This rule only generates the SR-reading:

(11-17) Olga einen Stuhl wieder rot strich SR LF
 Olga painted a chair red again



Movement of PRO creates an adjunction site for restitutive **again**.

- This method can only derive the SR-reading.
- The UR-reading requires a lifted version of the rule.

(11-18) The type lifted revised Principle (R) (preliminary)

Let R have the type $s((e(\dots(e(it))\dots))$ (R has n many e arguments)

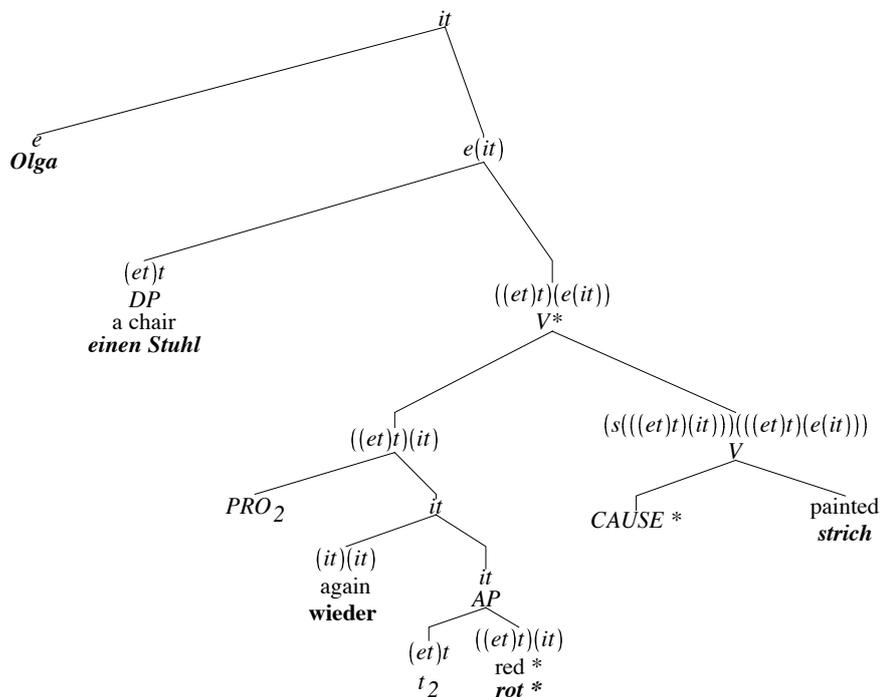
$[[\text{CAUSE}^*]] =$

$\lambda w.\lambda R^*.\lambda Q_{((et)t)(sit)}.\lambda Y_{(et)t}.\lambda y_2.\dots.\lambda y_n.\lambda t.\lambda w'.[\lambda w'.R^*(w')(Y)(y_2)\dots(y_n)(t)]$ causes in w at t $[\lambda w'.[Q(w')(Y)(\text{end}(t))]]$

$R^* = \lambda w.\lambda Y_{(et)t}.\lambda y_2.\dots.\lambda y_n.\lambda t.Y(\lambda x.R(w)(x)(y_2)\dots(y_n)(t))$

CAUSE has the feature [i-CAUSE]

(11-19) Olga painted a chair red again LF/UR



Olga painted a chair red; a chair had been red before (UR)

Two problems

1. Word order

(11-20) Olga strich wieder einen Stuhl rot (UR)

2. The rule possibly overgenerates

(11-21) Olga strich wieder jeden Stuhl rot. UR?
Olga painted again every chair red

(11-22) Olga hat wieder 5 Stühle rot gestrichen UR?
Olga painted 5 chairs red again

- The restitutive position of **wieder** is in the secondary predicate. There is no way to have the object in the scope of **wieder** in a control analysis. I cannot solve this problem. (A point for the predicative analysis?)
- Universal quantifiers and other strong quantifiers are perhaps not possible for the UR-reading. And ‘big indefinites’ are perhaps ruled out as well. The construction seems to be confined to the following NPs:

- (11-23) a. singular small indefinites: **einen Stuhl**
 b. bare plurals: **Stühle**
 c. bare numerals: **zwei, drei, vier**,
 d. bare **welche**

- (11-24) a. Olga strich wieder Stühle.
 b. Olga strich wieder vier rot.

c. Olga strich wieder welche.

This seems to be a phonetic condition on indefinites that cannot be captured semantically. But we have to investigate the facts more carefully. The best thing we can do is to restrict the lifting rule to indefinite terms, i.e. to *properties* of type *et*. Cf. (Zimmermann, 1993) for opaque verbs.

(11-25) The type lifted Principle (R) (revised)

Let R have the type $s((e(\dots(e(it))\dots))$ (R has n many e arguments)

$[[\text{CAUSE}^*]] =$

$\lambda w.\lambda R^*.\lambda P_{(et)(sit)}.\lambda Y_{et}.\lambda y_2.\dots.\lambda y_n.\lambda t.\lambda w'.[\lambda w'.R^*(w')(Y)(y_2)\dots(y_n)(t)]$ causes in w at t
 $[\lambda w'.[P(w')(Y)(\text{end}(t))]]$

$R^* = \lambda w.\lambda Y_{et}.\lambda y_2.\dots.\lambda y_n.\lambda t.\exists x[Y(x) \ \& \ R(w)(x)(y_2)\dots(y_n)(t)]$

CAUSE has the feature [i-CAUSE]

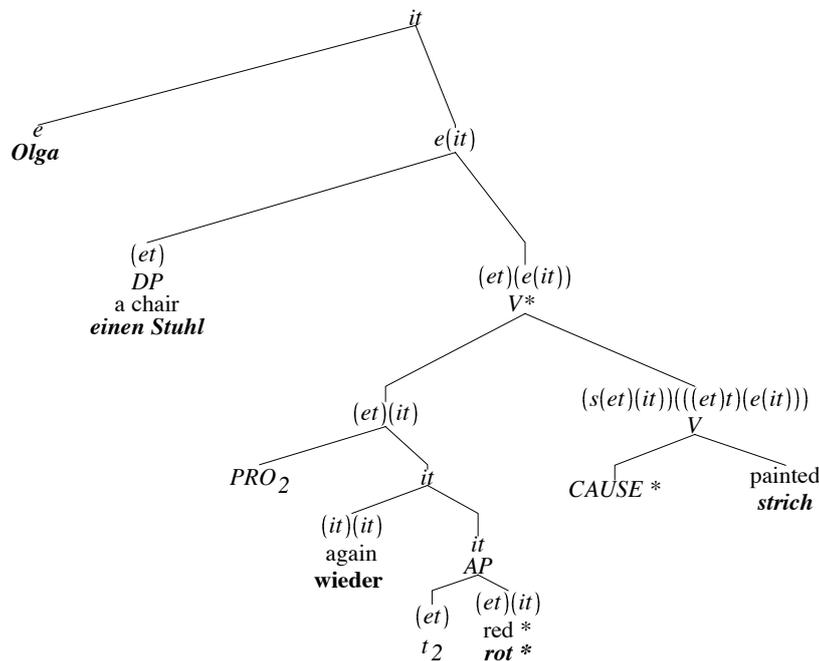
(11-26) *Result AP* (SR \checkmark , UR \checkmark)

Olga [painted CAUSE] a chair [red again]

The UR-reading:

'Olga's painting a chair at t causes at t that a chair is read at the end of t; there had been a red chair before t.'

(11-27) Olga painted a chair red again UR with revised lifting rule



Conclusion: The lifting rule is a last resort device. It requires additional PF-restrictions. The word order with the object under **wieder** cannot be generated.

12. ANALYSIS OF THE OTHER DATA

Path verbs

(12-1) Der Ball rollte wieder an die Tür rest/rep
 the ball rolled again at the door

The restitutive reading:

$(\exists p)[\lambda w'[\text{the ball rolls through } p \text{ at } t \text{ in } w'] \text{ causes in } w \text{ at } t$

$\lambda w'$: the ball had been at the door in w' before t . [the ball is at the door in w' at end(t')]

- p is a variable for paths (cf. (Cresswell, 1978))
- Generated by lexical causativization

(12-2) Fritz rollte den Ball wieder an die Tür
 Fritz rolled the ball again at the door

The restitutive reading:

Fritz causes in w a t that the ball rolls at the door again

= Fritz causes in w a t $\lambda w'(\exists p)[\lambda w'[\text{the ball rolls through } p \text{ at } t \text{ in } w'] \text{ causes in } w \text{ at } t$

$\lambda w'$: the ball had been at the door in w' before t . [the ball is at the door in w' at end(t')]

- Generated by another lexical rule of causativization. The relation 'cause' in the matrix has to be defined in a slightly different way as that in the complement.

(12-3) Der Ball rollte über den Teppich

$(\exists p)[\text{the ball rolls through } p \text{ in } w \text{ at } t \ \& \ p \text{ is over the carpet in } w \text{ at } t]$

- The path PP **über den Teppich** is a predicate of paths, the goal PP **an die Tür** is a predicate of individuals, though they look alike formally, i.e., they govern the accusative.

(12-4) Der Ball rolled über den Teppich wieder an die Tür.

The restitutive reading:

$(\exists p)[\lambda w'[\text{the ball rolls through } p \text{ at } t \text{ in } w' \ \& \ p \text{ is over the carpet in } w'] \text{ causes in } w \text{ at } t$

$\lambda w'$: the ball had been at the door in w' before t . [the ball is at the door in w' at end(t')]

(12-5) *Resultative Motion verbs* (SR \checkmark , UR \checkmark)

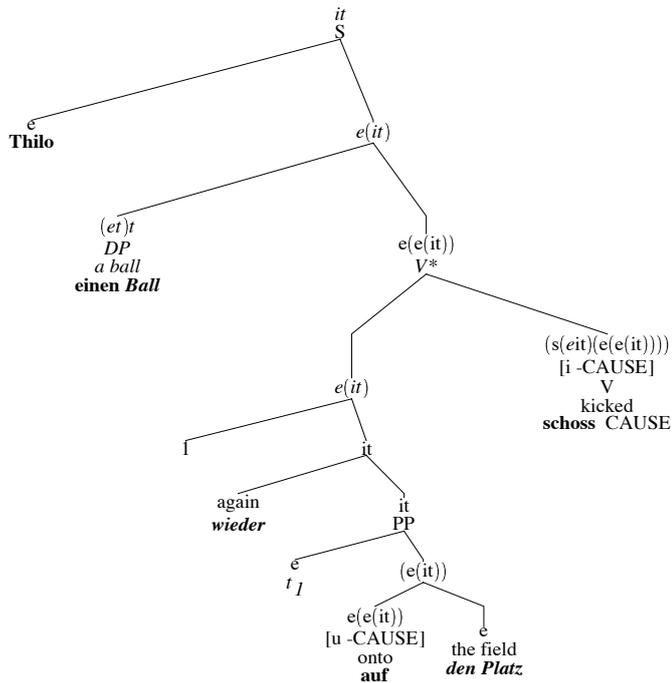
Thilo einen Ball wieder auf den Platz schoß

The SR-reading:

Thilo [shot CAUSE] a ball [[PP onto the field] again]

'Thilo's shooting a ball at time t causes at t that the ball is on the field at the end of t ; it had been on the field before'

(12-6) Thilo einen Ball wieder auf den Platz schoß (SR)



“Thilo’s kicking shot a ball onto the field; this ball had been on the field before”

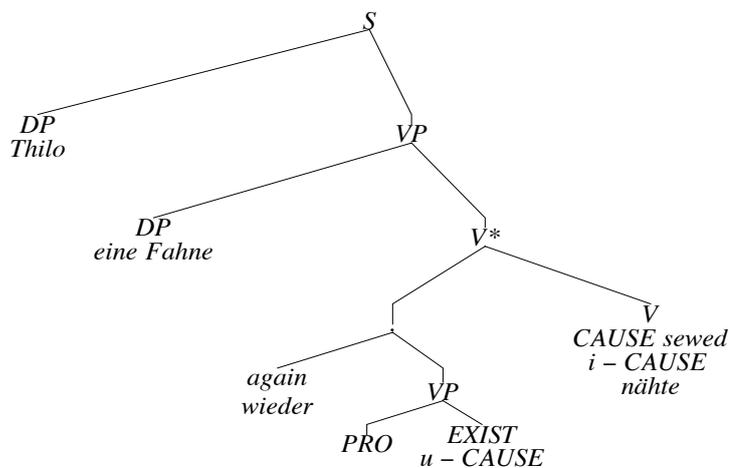
- The UR-reading is obtained by lifting.

(12-7) *Verbs of creation* (SR \checkmark , UR \checkmark)

Thilo sewed a flag again

Thilo [sewed CAUSE] a flag [[EXIST] again]

(12-8) weil Thilo eine Fahne wieder nähte DS/SR



“Thilo sewed a flag and that caused that the flag came into existence again”

The UR-reading is obtained by the lifted rule R.

(12-9) EXIST : type e(it)

Feature: [u-CAUSE] (or [u-BECOME])⁶
 [[EXIST]] = $\lambda w.\lambda x.\lambda i.x$ exists in w at time i .

The more natural word order for the UR-reading is:

(12-10) Thilo nähte wieder eine Fahne.

This cannot be generated by a control analysis. It might require a predication analysis.

(12-11) The verb *give* (SR \checkmark , UR \checkmark)

Thilo gave Satoshi a map again

Thilo [gave CAUSE] [[VP Satoshi HAVE a map] again]

Missing lexical entries:

(12-12) HAVE : type $e(e(it))$

Feature: [u-CAUSE]

[[HAVE]] = $\lambda w.\lambda x.\lambda y.\lambda i.y$ has x in w at time i . The verb give

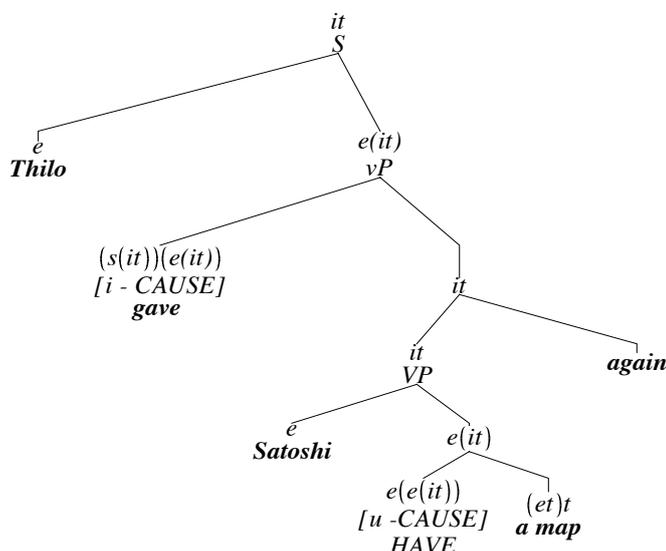
(12-13) **gave** : type $(sit)(et)$

feature: [*i-HAVE*]

[[**gave**]] = $\lambda w.\lambda P_{sit}.\lambda x.\lambda t.[\lambda w'.P(w')(x)(t)]$ causes in w at t [$\lambda w'.P(w')(end(t))$]

Features of the form *F* are subcategorization features. The select (or are checked by) a phrase that has the feature F. The F feature percolates to the head of the phrase. **gave** has the feature [*i-HAVE*] by its meaning.

(12-14) Thilo gave Satoshi a map again (UR)



“Thilo gave someone something and that caused that Satoshi had a map again”

The SR-reading is obtained by scoping **a map** over again.

⁶ [u-BECOME] is needed for:

- a. Wieder entsteht ein Stern (repetitive)
again BECOME [a star EXIST]
- b. wieder ein Stern entsteht ambiguous
BECOME again [a star EXIST] (restitutive)

- This is a predication analysis combined with syntactic decomposition.

Conclusion

Lexical causativization rules (Principle R) accounts for a large range of constructions involving secondary predication. The generation of the UR-reading is possible via a lifting rule, but we have a problem with word order.

To account for these facts by some meaning postulates alone seems hopeless.

13. LEXICAL VARIATION

Decomposition is a lexical parameter. There are verbs that mean virtually the same but are distinguished by decomposition triggering.

- (13-1) putzen/säubern 'to clean'
- a. Franzis putzte das Baby wieder (only repetitive)
 - b. Franzis säuberte das Baby wieder. (repetitive/restitutive)

So **putzen** means 'to clean', but **säubern** means 'being clean'; the latter verb has the feature [u-CAUSE], which triggers decomposition.

The example should make it clear that not every causative verb triggers decomposition. Cecile Meier wrote me this example:

- (13-2) Maria tränkte Fury wieder.
Mary watered Fury again

Tränken is a transparent causative alternation of the intransitive variant **trinken**. But it doesn't trigger decomposition. Which verbs are decomposed? The **wieder**-test tells us: if the restitutive reading exists, the verb is decomposed. If not, the verb is not decomposed.

The fact that verbs with the same meaning may behave different with respect to **wieder** is a strong argument against any treatment in purely semantic terms.

14. SUMMARY

1. Decomposition is triggered by the lexicon. There are two quite different constructions.

a. There are stative verbs that are embedded under the abstract verbs CAUSE or BECOME.

b. There are the causative Small Clause constructions, which require a lexical causativisation rule (Principle R).

2. There are two variants of lexical causativization, the control analysis and the predicational analysis. The control analysis is preferable on semantic grounds. But there remain problematic UR-cases, which are perhaps better analysed via a predication analysis.

3. There is cross-linguistic variation with respect to the lexical causativization rule. Romance and Slavic languages don't have it. Cf. (Beck and Snyder, 2001).

4. J&B's criticism has been discussed. The original counter examples are analysed. The more serious UR-readings in SC-constructions are analysed via the lifted version of rule R. This is not entirely satisfying, but there is no better alternative available at the

moment. An axiomatic approach has nothing to say on cross linguistic variation.

5. The syntactic and semantic treatment of **wieder** is extremely simple, and very subtle facts are explained in terms of the scope of **wieder**.

At the moment I don't see a serious competitor for this account and I think that it is basically correct.

15. REFERENCES

- Alexiadou, Artemis, Anagnostopoulou, Elena, and Schäfer, Florian. 2005. The Properties of Antcausatives crosslinguistically. In *Phases of Interpretation*, ed. M. Frascarelli, 23 pages. Berlin Mouton.
- Beck, Sigrid, and Snyder, William. 2001. Complex Predicates and goal PPs: Evidence for a semantic parameter: *Erscheint in: Proceedings of the Berkely Linguistic Society*.
- Beck, Sigrid, and Johnson, Kyle. 2004. Double Objects Again. *Linguistic Inquiry*:97-123.
- Beck, Sigrid. 2005. There and Back Again. *Journal of Semantics* 22:3-51.
- Cresswell, M. J. 1978. Prepositions and points of view. *Linguistics and Philosophy* 2:1-41.
- Dowty, David. 1979. *Word Meaning and Montague Grammar*: Synthese Language Library. Dordrecht: Reidel.
- Embick, David. 2002. Remarks on the Structure of Resultative Participles in English. Ms. University of Pennsylvania.
- Fabricius-Hansen, C. 1983. Wieder éin wieder? Zur Semantik von wieder. In *Meaning, Use, and Interpretation of Language*, eds. R. Bäuerle, C. Schwarze and A. v. Stechow, 97-120. Berlin: de Gruyter.
- Fabricius-Hansen, Cathrine. 2001. "Wi(e)der" and "Against". In *Audiatur Vox Sapientiae. A Festschrift for Arnim von Stechow*, eds. Caroline Féry and Wolfgang Sternefeld, 101-130.
- Heim, Irene, and Kratzer, Angelika. 1998. *Semantics in Generative Grammar*. Oxford: Blackwell.
- Jäger, Gerhard, and Blutner, Reinhard. 2000. Against lexical decomposition in syntax. In *Proceedings of IATL 15*, ed. Adam Z. Wyner, 113-137. University of Haifa.
- Jäger, Gerhard, and Blutner, Reinhard. 2003. Competition and interpretation: the German adverb wieder. In *Modifying Adjuncts*, eds. Ewald Lang, Claudia Maienborn and Cathrine Fabricius Hansen, 393-416. Berlin/New York: Mouton de Gruyter.
- Kamp, Hans, and Rossdeutscher, Antje. 1994a. Remarks on Lexical Structure and DRS Constructions. *Theoretical Linguistics* 20:97-164.
- Kamp, Hans, and Rossdeutscher, Antje. 1994b. DRS-Construction and Lexically Driven Inference. *Theoretical Linguistics* 20:166-235.
- Steinbach, Markus. 2002. *Middle Voice*: Linguistik Aktuell. Amsterdam/Philadelphia: John Benjamins.
- Sternefeld, Wolfgang. 2006. *Syntax*. Tübingen: Staufenburg Verlag.
- von Stechow, Arnim. 1995. Lexical Decomposition in Syntax. In *Lexical Knowledge in the Organisation of Language*, eds. Urs Egli, Peter E. Pause, Schwarze Christoph, Arnim von Stechow and Götz Wienold, 81-177. Amsterdam/ Philadelphia: Benjamins.
- von Stechow, Arnim. 1996. The Different Readings of *Wieder* "Again": A Structural Account. *Journal of Semantics* 13:87-138.
- Zeijlstra, Hedde. 2004. *Sentential Negation and Negative Concord*. Utrecht: LOT.

Zimmermann, Th. E. 1993. On the proper treatment of opacity in certain verbs. *Natural Language Semantics* 1:149-179.

Zimmermann, Thomas Ede. 1999. Meaning Postulates and the Model-Theoretic Approach to Natural Language Semantics. *Linguistics and Philosophy* 22:529-561.