Competition and interpretation: The German adverbs of repetition

Reinhard Blutner (Humboldt University Berlin) blutner@german.hu-berlin.de
Gerhard Jäger (ZAS Berlin) jaeger@zas.gwz-berlin.de

The adverb *again* (and its counterparts in other languages) displays a characteristic ambiguity that might be illustrated with ex. (1)

(1) Peter opened the window again.

In its repetitive reading, the sentence presupposes that Peter had already opened the window once before. In the restitutive reading, it is only presupposed that the window was open at some time before the described event. *Prima facie*, this pattern fits nicely into the overall assumptions of lexical decomposition, since the ambiguity can be reduced to a scope ambiguity in such an approach. The meaning representations of the two readings would come out as something like

(2) a. again(CAUSE(peter,BECOME(open(the_window)))) (repetitive)
b. CAUSE(peter,BECOME(again(open(the_window)))) (restitutive)

The representations in (2) suggest a treatment of *again* (and other repetitivals in other languages) which Fabricius-Hansen called ‚reductionistic'. According to this treatment, there are two meanings of *again*, the repetitive meaning which is typically seen as primary, and the restitutive meaning which is reduced to it. This view was accepted in Generative Semantics (see for instance McCawley (1971), Fabricius-Hansen (1975), Dowty (1976, 1979)). Recently, von Stechow (1996) (inspired by Dowty (1979) and Fabricius-Hansen (1983)) revived this approach and combined it with a modern syntactic analysis.[1] He presents additional support from German, where word order and prosody plays a role in disambiguating sentences with *wieder*, the German counterpart of *again*. In short, von Stechow (1996) predicts the following generalization: If *wieder* occurs to the right of the object, then both readings are available. If *wieder* occurs to the left of the object then only the repetitive reading is available. In the former case the two readings may be disambiguated by means of intonation. Correspondingly, the crucial minimal triple is given in (3):

[1]Von Stechow's semantic decomposition is somewhat different from the "classical" one, but for the purposes of this abstract, we may skip over these details.

(3) a. weil Peter das Fenster wieder ÖFFnete (restitutive)
SINCE PETER THE WINDOW AGAIN OPENED
b. weil Peter das Fenster WIEder öffnete (repetitive)
SINCE PETER THE WINDOW AGAIN OPENED
c. weil Peter wieder das FENster öffnete (repetitive)
SINCE PETER AGAIN THE WINDOW OPENED

We are going to argue that i) the reductionistic account (based on lexical decomposition) is unable to explain the full range of readings and instead *wieder*/*again* should be viewed as lexically polysemous or underspecified, ii) the correlation between truth conditions and word order/prosody in German is an indirect one, mediated by focus, and iii) the existing patterns of interpretational preferences can best be explained by a pragmatic account where a competition between interpretations leads to an optimal correspondence between interpretation and form.

Against the reductionistic account

To see the inadequacy of the reductionistic approach, consider the following example.

(4) Some members of the Delaware tribe will settle in New Jersey again.

This sentence has a reading where it is only presupposed that members of this tribe used to live in New Jersey, but not necessarily the same individuals that are about to settle there now. The decomposition approach predicts the three readings in (5), but not the described one.

(5) a. again(› *x*(delaware(*x*) ∨ CAUSE(*x*, BECOME(live_in(*x*, nj))))
b. › *x*(delaware(*x*) ∨ again(CAUSE(*x*, BECOME(live_in(*x*, nj))))
c. › *x*(delaware(*x*) ∨ CAUSE(*x*, BECOME(again(live_in(*x*, nj))))

In other word, under the decomposition analysis the reading in question poses a scope paradox since 1. the existential quantifier has to take scope over CAUSE (otherwise the subject argument place could not be bound), 2. CAUSE has to take scope over "again" (since we are dealing with a restitutive reading), and 3. "again" outscopes the existential quantifier (since otherwise presupposition and assertion would be about the same individuals). We obtain the adequate reading if we assume that *again* in its restitutive reading

presupposes that the result of the modified eventuality type has been instantiated in the past, while the repetitive reading requires that the modified eventuality type itself was previously instantiated. This can be captured by the following semantic entry for *again*:

(6) again'(P) = $\forall i.\ P(i)$ / [j: $j < i$ & $f(P)(j)$]

The variables *i* and *j* range over eventualities, < indicates temporal ordering. The material behind the slash represents the presupposition. "*f*" is a function variable that may assume the values "identity function" (leading to the repetitive reading) or "result" (which gives the restitutive interpretation).

To return to the scrambling data, first observe that the correlation between word order and the interpretation of *wieder* only shows up with definite objects. Surprisingly, if an indefinite or quantified object occurs to the right of *wieder* (i.e. in the unscrambled position), the restitutive reading seems possible as well and even preferred in some contexts:

(7) Als Peter wieder {ein/fast alle} FENster öffnete, verzog sich der Rauch

In ex. (7) we have neutral intonation and no element is interpreted contrastively. The following examples show that even in the case of definite objects we get a restitutive reading when the object or part of it is interpreted contrastively:

(8) a. Da das rechte Fenster klemmte, hat Peter wieder das LINKE Fenster geöffnet.
b. Da die Tür verschlossen war, hat Peter wieder das FENster geöffnet.

Summarizing, there are puzzling data that suggest to look for alternatives to von Stechow's (1996) structural account. What follows is a short introduction into the pragmatic framework and a sketch of an account we call ‚polysemistic'. This approach combines the idea of semantical underspecification with an improved mechanism of pragmatic strengthening.

The pragmatic framework

Using a relational picture of context change, we write *cg*[sem(")]*cg'* in case that *cg'* is

a possible outcome of updating *cg* with sem(").[2] Using this relational notion, different aspects of underspecification can be taken into account. Furthermore, the problem of contextual strengthening becomes one of formulating additional restrictions on the *possible update triples* (*pup*s) <*cg*,",*cg'*>, i.e. these triples that satisfy *cg*[sem(")]*cg'*.

According to work of Atlas & Levinson (1981) and others, the pragmatic mechanism of contextual strengthening is supposed to be controlled by two competing forces: The I-principle and the Q-principle. In short, the I-principle selects the most coherent enrichment (interpretation). The Q-principle, on the other hand, acts as a blocking mechanism and suppresses those enrichments that likewise are realized in connection with „simpler" alternative expressions. The interaction of these two competing forces leads to an effect that Horn (1984) baptized the "division of pragmatic labor". This effect states an optimal correspondence between interpretation and form and has been formulated as follows: The use of marked expressions—when a corresponding unmarked expression is available—tends to be interpreted as conveying a marked message.

Blutner (1998) derives the following generalization of this optimality principle: Given an expression with two possible enrichments (interpretations), the more expensive one is strongly preferred in case there is a blocking expression that realizes the simpler enrichment less costly. The less expensive interpretation is strongly preferred in case there is no blocking expression that realizes this interpretation less costly. It is obvious that this mechanism restricts the set of *pup*s considerably. The resulting *pup*s, which are conform to that optimality principle, are called *pragmatically licenced pups.*

An example that may help to illustrate the main idea is concerned with the phenomenon of partial blocking. McCawley (1978) observes that the distribution of productive causatives is restricted by the existence of a corresponding lexical causative:

(9) a. Black Bill killed the sheriff
b. Black Bill caused the sheriff to die

Whereas lexical causatives tend to be restricted in their distribution to the stereotypic causative situation, productive (periphrastic) causatives tend to pick more marked

[2] *cg* and *cg'* are principally intended to denote common grounds. However, what we suggest in this paper does not really appreciate the problem of updating common grounds. Instead, we are concerned mainly with updating information states of single agents without respecting the feature of mutuality. (Cf. Zeevat 1998 for a more careful treatment in this respect; it is limited, however, in other respects).

situations of mediated, indirect causation (Black Bill caused the sheriff's gun to backfire by stuffing it with cotton). Table (10) illustrates how this phenomenon may be explained by reducing it to the interplay of different cost factors and assuming the *same* semantic restrictions for *kill* and *cause to die*.

(10)

cg (some neutral context)		a<b	a<c	b<d
A.	kill	L a		b
B.	cause to die	c	L	d
		cg+CAUSE$_{dir}$ TO DIE	*cg*+CAUSE$_{indir}$ TO DIE	

In case of the lexical causative, the cheapest context change may be abbreviated by *cg*+CAUSE$_{dir}$ TO DIE and conforms to the stereotypic causative situation. It is selected[3], since the corresponding cost value a is smaller than c (the value of the periphrastic alternative). Hence blocking is excluded. In case of the productive causative construction, on the other hand, the more expansive enrichment *cg*+CAUSE$_{indir}$_TO_DIE is selected. The reason is that in this case the lexical causative blocks the stereotypic enrichment.

For the following we have to elaborate the framework in three important respects. First, we have to specify the format for representing *cg* and sem(''). Second, we have to specify the notion of context change *cg*[sem('')]*cg'*, and third we have to specify the cost function.

With regard to the representational format, we will proceed by modelling contexts as DRSs. Moreover, the initial DRSs of presupposition-inducing expressions are treated in the particular framework of van der Sandt (1992) and Geurts (1994).[4]

Following a proposal of Bart Geurts[5], presuppositions can be considered as a specific kind of structural underspecification. This suggest the following notion of context change:

(11) *cg*[sem('')]*cg'* just in case *cg'* is the result of merging *cg* with the result of projecting the presupposed material of sem('') to one of its superordinated DRSs.

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[3] Selection is indicated by L, as usual in *optimality theory*.

[4] As before, presupposed information is marked as material behind a *slash*.

[5] Personal communication.

That part of the projected DRS that factors with part of the superordinated DRS/context (*cg*) will be called *bound (*or *resolved) material*, the other part will be called *accommodated material.* Let's illustrate these notions with a simple example. In (12a) a question is raised which is assumed to state the context *cg*. In (b-d) three answer candidates are considered. In the corresponding DRSs, the part of the presupposition which counts as *bound* when projected to the top level is *underlined*, and the part which has to be *accommodated* (at top level) is *underlined twice*. With regard to each of the three answers, the result of merging them with *cg* is (12e).

(12) a. Who did John kiss?
cg: [u,v: u KISS v , u=john]

b. John kissed $MARY_F$
[: y=mary / [x,y: <u>x KISS y , x=john</u>]] <u>Binding</u> in case of {u/x, v/y}

c. #$JOHN_F$ kissed Mary
[: x=john / [x,y: <u>x KISS y</u> , <u>y=mary</u>]] <u>Accommodation</u>

d. ?$JOHN_F$ kissed $MARY_F$
[: x=john, y=mary / [x,y: <u>x KISS y</u>]] <u>Binding</u> in case of {u/x, v/y}

e. cg': [u,v: u KISS v & u=john & v = mary]

In order to explain which question-answer-pairs are acceptable in the present setting, we have to determine which *pup*s are pragmatically licensed. This requires the postulation of an ordering of the corresponding costs of context change. In the present paper, this ordering will be provided in the style of optimality theory (Prince & Smolensky 1993), where a set of ranked constraints (on *pup*s) is assumed. A *pup* B is assumed to be cheaper (more economical) than a *pup* B' iff B is evaluated higher then B', with regard to the highest ranked condition where the two pups are evaluated differently.

Two candidates for such constraints come into mind immediately. The first one, call it *Avoid Accommodation*, evaluates context change with regard to the necessity of accommodation. The second one, call it *Avoid focus*, evaluates context change with regard to the demand of adding focused material. Both conditions would prefer the strict binding (=resolution) option, since in this case neither accommodation nor the addition of focused

material is required. For different reasons, this arrangement is excluded in most discourses. It should be mentioned that the first constraint is due to van der Sandt (1992). This author formulates a general preference for binding if a presupposition can both be bound or accommodated. The second constraint is the heart of Schwarzschild's (1996) *deaccenting theory of congruence*. What about the ranking of these constraints? In order to give focus a chance, *Avoid Accommodation* should be ranked higher than *Avoid focus*. This stipulation has the very plausible outcome that accommodation must be avoided if it can be avoided.

With these conditions at hand we are prepared to understand why the question answer pair (12)(a,b) is licensed and the pairs (12)(a,c) and (12)(a,d) are not. Table (13) shows that only in the former case the costs of context change are minimal.

(13)

Who did John kiss?		
L	John kissed $MARY_F$	*AvoidFoc
	$JOHN_F$ kissed Mary	*AvoidAcc *AvoidFoc
	$JOHN_F$ kissed $MARY_F$	**AvoidFoc
		[u,v: u KISS v & u=john & v = mary]

The present treatment of pragmatic strengthening bolsters the way to explain how formal parameters such as word order & prosody–mediated by focus–affect the interpretation of utterances.

The German repetitivals: Explaining interpretational preferences

The present framework takes into account the underspecification of the semantic representation of „wieder" (*again*), and accordingly the semantic underspecification of sentences as (3), (7) and (8). As we have tried to demonstrate, the interpretational effects observed in connection with these sentences consist in context- and focus-dependent preferences for either the restitutive or the repetitive interpretation. In the following we want to give an informal sketch of how these interpretational preferences can be accounted for by combining an underspecified semantics with the proposed mechanism of pragmatic strengthening.

For the present purpose two kinds of underspecification have to be taken into account: (i) presuppositions as a specific kind of structural underspecification, and (ii) the particular lexical underspecification connected to the semantic entry of „wieder“ (*again*) as represented in (6), where we have the function variable *f* that may assume the values “identity function” (leading to the repetitive reading) or “result” (restitutive interpretation).[6]

As postulated before, let’s assume that the accommodation of conceptual material is the dominant factor in determining interpretation costs. The more propositions have to be accommodated for giving a contextually coherent utterance, the more expensive is the interpretation. The accommodation of assumptions regarding the past time interval *j* can be considered as more complex in case of the repetitive interpretation than in case of the restitutive interpretation. This is because the repetitive interpretation requires assumptions about both the subject term and the object term. The restitutive interpretation, instead, only requires assumptions about the object term. This constitutes the main difference between the restitutive and the repetitive reading as illustrated in the table (14) (column of „AvoidAcc“, right part).

(14)

... Paul, das Fenster ... Was geschah dann?		AvoidAcc /AvoidFoc			AvoidAcc /AvoidFoc		
A.	[Paul hat das Fenster wieder geÖFFnet$_F$]$_F$	L	*	*****		**	*****
B.	Paul hat das Fenster WIEDER geöffnet	*	*	*	L *	**	*
C.	Paul hat wieder das FENster$_F$ geöffnet	*	*	*	L *	**	*
...	...	...	...	...	...	...	...
			restitutive			repetitive	

The present theory of semantic underspecification evaluates the examples (3a) and (3b) nearly as semantically equivalent. As a consequence, the effect of Horn‘s "division of pragmatic labor" may explain the interpretation preferences: The unmarked accent pattern

[6] For an appropriate formalization, the definition (11) has to be extended in order to respect the different values („precisifications“) of the „place holder“ *f*.

(3a) tends to select the restitutive interpretation, whereas the marked accent pattern (3b) tend to select the repetitive interpretation.[7]

Several authors argue (cf. for instance Jäger 1995, Meinunger 1995, Reinhart 1995) that a definite object *in situ* such as in (3c) indicates that the object itself or the whole VP is in focus. That means that (3c) uttered out of the blue requires more focus-dependent accommodation than the utterance of (3a) (in the latter case we can assume that the whole sentence is F-marked). As a consequence, (3a) counts as blocking expression of (3c) and our optimality condition predicts a preference for the repetitive interpretation of (3c), when uttered out of the blue. Now it is simple to explain why in exs. (7) and (8) the repetitive interpretations are preferred. In the case of (7) the expression (3a) counts no longer as a blocking alternative to (7), because F-marking of the whole sentence is possible in (7) as well as in (3a). And in (8) the contrasting contexts are explicitly given what decreases the accommodation costs.

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[7] The presupposition about the past time interval is **one** possible trigger of accommodation. Another trigger is the presupposition that is associated with the focus-marking of the sentence (Schwarzschild's (1996) existential F-closure of an utterance). Since the marked accent pattern in (3b) triggers a much more specific presupposition associated with focus, such pattern are in need of additional accommodation (indicated by the asterisk of the left side of the colon „AvoidAcc"). Consequently, the marked accent pattern is associated with a more expensive interpretation (according to the present theory) than the unmarked one.

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