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The Concept of Semantic Phase and the Different Readings of *again*

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Abstract. The paper offers a new kind of approach to the semantic contrast between repetitive and restitutive *again*. The heart of the theory is the new concept of Semantic Phase. It parallels the syntactic concept and is motivated as an instance of the Principle of Hierarchical Abstraction. The concept refers to a switch from imperfective to perfective view of a situation at the level of vP. Applying the modifier before or after phase transition derives the two readings without stipulation of lexical ambiguity. The framework used is Finite-state Temporal Semantics of Fernando. The syntactic background is an Orphan analysis of right-peripheral adverbials. Syntactic underspecification is resolved by the use of pragmatic information reflected locally by the prosody of the utterance.

1 Introduction

1.1 The Basic Data

The paper is concerned with the ambiguity that can arise in connection with the interpretation of the adverb *again* (or German 'wieder'). While in connection with atelic *states* and *activities* again expresses plain repetition, applied to a telic *accomplishment* or *achievement*, the adverb either expresses repetition of the entire event (*repetitive reading*) or repetition of its result state only (*restitutive reading*). Consider the following telic standard example.

(1) John opened the door again. (rep./rest.)

The restitutive interpretation presupposes that the door has been open sometime before, but it does not require that is has been opened by John or anybody else. For the repetitive interpretation to be true, the door must have been opened by John at some point of time in the past.

The surface position of the adverb seems to have influence on the availability of the possible interpretations. On the one hand there is the ambiguous sentences in (1) where we find the adverb in sentence final position, on the other hand the second sentence in (2) with sentence initial adverb for which only the repetitive interpretation is available.

(2) Again, John opened the door. (rep.)

For the ambiguous first construction intonation can be used as a disambiguation device. While unmarked intonation goes with the restitutive reading, main accent on the adverb forces the repetitive interpretation.

(3) a. John opened the DOOR again. (rest.)
b. John opened the door AGAIN. (rep.)

1.2 Some Existing Approaches

The repetitive/restitutive duality of *again*/'wieder' is probably the most thoroughly discussed example of the syntactic-semantic flexibility that is characteristic of adverbial adjuncts in general. Against this background, the outcome of the several approaches was not purely descriptive, but was at the same time aiming at giving us some deeper and more general insights into the syntax and semantics of verb phrases and into the constitution of interfaces. Therefore, the analysis of *again*/'wieder' has always been like a measure of what has been achieved in the linguistic theory of adjuncts. Up to now the issues are far from being settled. The controversy primarily concerns the question of where to locate the source of the ambiguity: in semantics, syntax or pragmatics.

The classical treatment of Dowty (1979) presupposes decomposition in a conceptual semantic language. In the representations of the two readings of the ambiguous sentence, the adverb occupies the same structural position. The interpretational contrast arises from two different semantic representations that belong to different syntactic categories: a sentence modifier and verb phrase modifier. A meaning postulate accounts for the semantic relationship between the two. Although the semantic contrast derives correctly in this framework, no explanation can be given for the influence of syntax or prosody, and the solution is based on stipulation of lexical ambiguity .

Later approaches that include the concept of lexical ambiguity (with or without meaning postulates) are, for instance, Fabricius-Hansen (2001), Reyle, Rossdeutscher & Kamp (2008), Jaeger & Blutner (2003).

The most principled alternative, that tries to do without theoretically costly stipulations on the lexical semantic side, is the theory of von Stechow (1996). It is based on the following kind of data for German 'wieder'.

(4) a. (weil) Fritz wieder das Fenster öffnete (rep.)
b. (weil) Fritz das Fenster wieder öffnete (rest./rep.)

Assuming a single lexical semantic entry, von Stechow claims that the ambiguity can be resolved entirely in terms of syntactic scope. Decomposition in the

style of Generative Semantics is located in the syntax. The theory is based on a rather complex and abstract syntactic theory and uses movement of arguments to Case positions. The leading idea is, that a structural accusative position has wide scope with respect to the agent relation expressed by the head of the Voice Phrase. If 'wieder' precedes an accusative object, a repetitive reading is obligatory, if it follows the accusative object, two readings are available due to two possible positions of the adverbial. Since the arguments have moved to their Case positions outside the Voice Phrase, the D-position of the adverb is no longer uniquely identifiable from the surface, hence the ambiguity.

Another scope-based account was given by Pittner (2003). On the base of a single lexical entry for the adverb, the different readings are determined by the syntactic entity the modifier is related to. Although this assumption seems very natural and promising, it is not a trivial matter from a theoretical point of view. If one accepts that an adjunct that is assigned one and only one semantic representation can modify different types of entities, one would have to account for the interaction between the semantic contribution of the adjunct and the semantic properties of the modified entity in a principled way.

Pointing to German word-order effects in connection with indefinite objects as well as to the disambiguating effects of intonation, Jaeger & Blutner (2003) offer an alternative approach to the syntactically based theories, that uses the framework of Optimality Theory. Disambiguation is the result of a process of pragmatic strengthening, which selects optimal candidates from a highly underspecified relation between form and meaning. The word-order effects involve scrambling of definite noun phrases. Optional from the point of view of syntax, scrambling of nominal arguments plays an important role in the information structural partition of an utterance into background and focus. Semantic material that is known or in some sense anaphoric relative to the context is moved out of the focus domain. On this basis it can be explained why the semantics of example (5) below, with the adverbial preceding an indefinite object, is similar to the one given before where the adverbial follows a definite object (4b).

(5) (weil) Fritz wieder ein Fenster öffnete (rest./rep.)

Furthermore, considering the connection between pragmatic and prosody, it can be stated that de-accented constituents are given. Accordingly, de-accenting a verb phrase in a syntactically ambiguous 'wieder'-construction triggers a repetitive interpretation; in this case the sentence accent ends up on the adverbial. Unmarked intonation, on the other hand, places the main accent on the object if it is verb adjacent and on the verb otherwise, and causes a restitutive

interpretation. As was shown at the beginning (3), for the English examples there are similar disambiguation effects arising from the presence or absence of an accent on the adverbial.

(6) a. (weil) Fritz das Fenster WIEDER öffnete (rep.)
b. (weil) Fritz das Fenster wieder ÖFFNETE (rest.)

Although the approach does justice to the influence of context and intonation, the different interpretations need to be based on different lexical entries again, and there is no compositional semantics available in the theory.

1.3 The Aims of the Paper

In this paper we are going to present a new type of approach that tries to combine the virtues of the existing theories while avoiding their drawbacks.

It uses a concept of semantic decomposition that is less abstract than the one introduced by Dowty. There is no assumption of lexical ambiguity. It is a scopal approach but it can do with a much simpler structure and without the concept of syntactic decomposition. Furthermore, scope is not syntactically but pragmatically determined, and mediated by the assignment of constituents to the information structure domains of focus and background. This kind of context-sensitive scope resolution gets formally implemented using prosodic information that is locally available on the constituents of the utterance. The different readings of the adverbial are determined with respect to the same situation seen from different aspectual viewpoints. The idea of systematically changing the view of a situation follows from an independently motivated and general cognitive principle: the Principle of Hierarchical Abstraction.

The proposal is part of a more general approach to left/right contrasts in the interpretation of English temporal adverbials that was offered in Gründer (2009). Accordingly, the focus of the investigation is on finding a theoretically well-motivated and general analysis for the standard cases of repetitive/restitutive ambiguity for *again*. Technical solutions for special cases or exceptions, that are known in the literature, will have to be part of a more detailed future work. We take the fact that the general strategy motivated in the paper can also be used to derive several other contrasts in adverbial modification as giving further weight to the proposal made here.

2 Semantic Phase Theory

2.1 Hierarchical Abstraction

The *Principle of Hierarchical Abstraction* is seen as one of the most fundamental and general cognitive principles to reduce complexity of problem-solving

tasks. It is a means to reduce details and condense information through stepwise merge of several elements in the problem space into one.

In modern linguistic theory, language too is described as a *'system of discrete infinity, consisting of hierarchically organized objects'* (Chomsky 2008: 137). Additionally, the Principle of Hierarchical Abstraction is included in form of *Syntactic Phases* (Chomsky 2001, 2008).

Phases mark points in the derivation where syntactic material is transferred to the phonological component of the language system. At the level of CP and vP (or VP if one does without assumption of the v-head), only material in the head and the specifier is kept available for further syntactic processing; the information contained in the complement is spelled out respectively. In consequence, complexity of syntactic processing is reduced by minimizing search space and unloading working memory.

Interestingly, pragmatics assumes a similar transition point too. In information structure theory, the verbal domain is often considered the new information focus domain of the utterance. This view rests on the assumption that the syntactic tree undergoes partition into areas which are treated differently in semantics (for instance, Diesing (1992)).

Now the idea is to integrate this pragmatic differentiation into semantics and make vP a relevant transition point for semantic composition too. The concept of Semantic Phase, that is proposed in this paper is considered an instance of the general Principle of Hierarchical abstraction. Taking into account the parallel to the syntactic as well as the pragmatic concept, phase abstraction would become a candidate for a general interface principle.

2.2 Perfective vs. Imperfective Viewpoint

In case of the semantic phase concept, phase transition is supposed to consist in a change of the temporal granularity of the model when leaving vP. More precisely, while at a point of semantic processing inside vP, the situation appears to be internally structured into different temporal phases, outside vP it is seen as an unstructured single whole.

These two different views of a situation can be considered a structural realization of the concepts of imperfective and perfective aspect. According to Comrie (1976), aspectual categories are different ways of viewing the internal constituency of a situation. *'Perfectivity indicates the view of the situation as a single whole, without distinction of the various separate phases that make up that situation; while the imperfective pays essential attention to the internal structure of the situation'* (ibid.).

Obviously, changing from imperfective to perfective view at the level of vP is a way of hierarchically abstracting from details and reducing complexity

of the model and of the representation.

2.3 The Proposal in a Nutshell

In the context of the paper, the capacity to describe the world at different levels of granularity is considered a symptom of the context-sensitivity of natural language. It is explained as a means to reduce complexity of semantic processing by applying the Principle of Hierarchical Abstraction.

Granularity shifts proceed via underspecifying situations and situational descriptions with respect to certain temporal aspects of their interpretation. Conceptual details concerning the internal temporal constituency of a situation are only available during local processing inside the new information focus of an utterance. They are abstracted away as soon as processing reaches the background domain of the utterance, where the information needs to be globally handled and brought into relation to the overall semantic context.

To have available two different conceptual views of a situation makes natural language a very flexible descriptive means that can be very precise and very effective at the same time.

In connection with the problem of ambiguities in temporal adverbial modification the idea is the following. The puzzling flexibility in the semantics of temporal adverbials is due to the granularity of temporal meaning. The imperfective or perfective view of a situation is chosen as an attaching point for the adverbial depending on the context of its use inside or outside the new information focus of an utterance. Applying the identical adverbial to the same situation represented at different levels of granularity causes the entire group of characteristic interpretational contrasts.

3 The Semantic Framework

3.1 Situations as Regular Languages

What is needed to formally analyze the semantic contrast for the adverb *again* in the way sketched above is a semantic framework that is decompositional. A situation has to be represented not just as an indivisible atom, but its different temporal parts need to be taken into account and made accessible by the formalism. Additionally, there should be the possibility to implement the idea of different levels of granularity. Thereby, internal structure of a situation can be included or abstracted away by decision.

A modern approach to event semantics that could serve well as a basis for formal implementation is *Finite-state Temporal Semantics* of Fernando (2003, 2004, 2006) Fernando (2003, 2004, 2006). In Fernando‘s theory, a situational concept is formalized as a Regular Language.

Given a finite set Φ of formulas, a symbol σ of such language consists of a non-contradictory subset of Φ, which non-exhaustively describes what holds true at some single point in time. The symbols are combined via the basic regular operations concatenation $\sigma_1\sigma_2$, alternation $\sigma_1 + \sigma_2$ and iteration σ_1^* (or σ_1^+ for non-empty iteration) to form regular expressions which define a regular language as a set of strings. Negation of symbols is defined in the style of De Morgan as: $\neg \square = \Phi$; $\neg \boxed{\phi_1,...,\phi_n} = \boxed{\neg\phi_1} + ... + \boxed{\neg\phi_n}$.

A simple example (by Fernando) is given below. Take the symbols to be snapshots of a camera; then each string can be viewed as a temporal sequence of such snapshots. With respect to the given example 'rain from dawn to dusk' this means, that the formalization of the situational concept starts with a picture on the left, on which there can be seen rain and dawn, followed by a finite number of pictures in the middle on which there is rain, and ended by one on the right that shows rain and dusk.

(7) Λ(*rain from dawn to dusk*) = $\boxed{\text{rain, dawn}}\ \boxed{\text{rain}}^*\ \boxed{\text{rain, dusk}}$

Therefore, a situation is represented not just as an atom, but its internal states are taken into account as well. No abstract BECOME-operator needs to be used, since the concept just directly mirrors the temporal path of the event.

The model of such a language is given by a Kripke Frame with partial valuations. More precisely, the interpretational basis consists of a set of states that are partial valuations over a set of variables A, the carrier of a first-order structure.

Additionally, Fernando includes time variables in language and grounds them in the model by the help of δ-*points*. That means, instead of the continuum of the real numbers, moments in time get modeled by non-open intervals $(r\text{-}\frac{\delta}{2},\ r+\frac{\delta}{2})$. This strategy is motivated by the intuition that the precision of actual observations always is finite. The choice of the extension of the δ-*points* determines a certain temporal granularity of the model.

3.2 Situational Classes

Fernando's central idea for a definition of aspectual features is to formally base it on the symbols α(L) and ω(L) that start and finish a given language, respectively. They serve to encode the property of a situational type of being initially or finally bounded or unbounded. If the condition α(L) is immediately switched after the first stage an initial boundary is marked; if α(L) is preserved the concept is initially unbounded. In the same way ω(L) can be used to mark a final boundary, reading the string from right to left in that case. Aspectual features, according to Fernando, then just enumerate all the possibilities for a corresponding concept to be bounded or unbounded in that sense.

Definition 1. Aspectual Features:

telic (L) = $\neg\omega(\mathrm{L})^{+}\,\square$
iter (L) = $\square\,\omega(\mathrm{L})^{+}$
prog (L) = $\square\,\neg\alpha(\mathrm{L})^{+}$
reten (L) = $\alpha(\mathrm{L})^{+}\,\square$

Let us assume a situational concept has a minimal length of three symbols, in other words, every situation consists of a beginning, a middle part, and an end. On this perspective, the four classical aspectual classes are derivable as the set of logically possible cross-combinations of the four aspectual features as defined above.

Below, the corresponding properties of being initially or finally bounded, are marked by using a short binary code, with the first digit referring to the beginning, the second to the ending, and 1 and 0 indicating the presence or absence of a boundary, respectively. If we let *a* and *o* refer to the two boundary marking propositions inside the symbols α(L) and ω(L) we get the abstract characterizations on the very right.

Definition 2. Aspectual Classes:

state:	reten, iter	(0 0)	$[a]\,[a, o]^{+}\,[o]$
activity:	prog, iter	(1 0)	$[a]\,[\neg a, o]^{+}\,[\neg a, o]$
achievement:	reten, telic	(0 1)	$[a, \neg o]\,[a, \neg o]^{+}\,[o]$
accomplishment:	prog, telic	(1 1)	$[a]\,[\neg a, \neg o]^{+}\,[\neg a, o]$

The following translations, which give formalizations within the framework of some concrete examples, may serve as an illustration. (For the sake of abbreviation, $\neg a$ is suppressed in presence of *o* on the basis of obvious entailment relations.)

(8) a. $\Lambda(\textit{be silly}) =$ [be silly(x)] [be silly(x)]$^{+}$ [be silly(x)]

b. $\Lambda(\textit{swim}) =$ [$\neg\exists y \neq \emptyset$ (swim(y))] [$\exists y \neq \emptyset$ (swim(y))]$^{+}$ [$\exists y \neq \emptyset$ (swim(y))]

c. $\Lambda(\textit{reach the summit}) =$ [$\neg$(be at summ.(x))] [$\neg$(be at summ.(x))]$^{+}$ [be at summ.(x)]

d. $\Lambda(\textit{build a tower}) =$ [$\neg\exists y \leq t$ (build(y))] [$\exists y \leq t$ (build(y)), $\neg$build(t)]$^{+}$ [build(t)]

In example (8a) the relevant proposition - being *a* and *o* at the same time - refers to a state of mind of the subject. The valuation of the proposition remains unchanged for finitely many states, and so no boundaries are marked for the state-concept. In the representation of the activity concept in (8b) the variable is referring to parts of a spatial path the subject is taking. Here, an initial boundary exists due to the change of the truth value of the *a/o*-proposition from the first to the second state. Since after this immediate switch the valuation of the proposition then remains unchanged for finitely many states, no final boundary is marked, and the situational concept therefore is an iterative or atelic one. In (8c) the spatial position of the subject is what matter for a characterization of the phases of the achievement. The change in truth value of the *o*-proposition from the second last to the last state marks a final boundary, and therefore makes the situational concept telic. But there exists no initial boundary. Finally, in (8d) the constant *t* is referring to the tower, the values of the variable *y* are the parts of the tower that were already constructed. Condition α ($\neg\exists y \leq t$ (*build*(*y*))) changes its truth value right after start; condition *o* (*build*(*t*)) just before the end. Accordingly, the accomplishment-concept is initially as well as finally bounded.[1]

4 The Semantic Analysis

4.1 The Basic Concepts

The possibility within the framework to change the granularity of the model allows a direct formal implementation of the concept of semantic phase, that was proposed in Section 2. For a representation of the imperfective view of a situation, that takes into account its internal temporal structure, the representation mainly looks like the formula presented in the previous section, just with the subject included. Below there is the imperfective version of the concept 'John open the door' (infinitive) from the initial examples (*o* refers to the opening-angle of the door, *j* the subject).

(9) $\boxed{\neg\exists x \leq o\ (\text{open}\ (j, x))}\ \boxed{\exists x \leq o\ (\text{open}\ (j, x)), \neg\text{open}\ (o)}^{+}\ \boxed{\text{open}\ (o)}$

[1] In order to differentiate result states that are reversible ('open the door') from those that are not, Fernando marks a set of inertial formula, that hold until a force is applied to stop them holding ('build a tower') or cannot be stopped at all ('write an article'). For Fernando this concept of inertia is relevant in connection with the definition of the perfect, but it also plays a role for temporal adverbial modification. For instance, application of *again* should be blocked in cases where a result is strictly inertial. In what follows this problem will be of minor interest though. The main focus of the formalization of the initial examples will be on the contrast between telic and atelic concepts with respect to the interpretational effects they show in connection with the adverb *again*.

In order to get a perfective view of the same situation, that abstracts away from its internal structure, one has to increase granularity of the model until the entire situation just falls into one state. Metaphorically, the snapshot taken by our camera has an increased duration of exposure such that the entire event can be taken by a single picture. Accordingly, after of phase transition at the level of vP, the above representation in (9) gets changed and condensed in the following way.

(10) $\square^{*}$ [j open the door]

For an analysis of the meaning of the adverb *again* I assume the following single representation. The formula refers to the last symbol $\omega(L)$ of the regular expression that represents the situational concept the adverb is supposed to modify.

(11) $\Lambda(again) = \omega(\mathrm{L})\,\square^{*}$

The adverbial concept will get combined with the situational concept by simple concatenation. By just writing the two respective string one after the other in that way, the temporal presuppositional character of the meaning of *again* is captured directly.

4.2 *Again* and Telic Situational Concepts

Now let us see how the contrast between the repetitive and restitutive reading, which *again* shows when applied to a telic situational concept, derives on that basis.

In case of the restitutive reading, the adverb gets interpreted before phase transition and with respect to the imperfective view of the situation. In this constellation, the symbol $\omega(L)$, that is used by the modifier, is just the result state of the event. Consequently, after modification the concept mirrors a temporal course where the result of the event held already at an earlier point in time. Below this is spelled out for the initial example 'John open the door again'. Here, an accomplishment is chosen, but for an achievement the mechanism would obviously work quite parallel.[2]

(12) [open (o)] $\square^{*}$ [$\neg\exists x \leq o$ (open (j, x))] [$\exists x \leq o$ (open (j, x)), $\neg$open (o)]$^{+}$ [open (o)]

In contrast, the repetitive reading follows from applying the adverb after phase transition. Now, the situation is represented from a perfective point of view. In result, the relevant symbol $\omega(L)$, that it taken by the adverbial, comprises the

[2] Tempus is not included in this article, but can easily be following the formalization available in Finite-state Temporal Semantics.

description of the full situation, that was condensed into a single state of the model. Accordingly, the regular expression that comes up after modification describes a temporal course where the entire event with the identical subject already took place at some previous point in time.

(13) [j open the door] $\Box^*$ [j open the door]

This means, the identical semantic representation for the adverb *again* can be used to derive both possible readings. Note, that since the imperfective and the perfective view of the a situation are both just regular expressions, no problems of type-shift arise in the formalism used here.

4.3 *Again* and Atelic Situational Concepts

As was said at the beginning, in connection with atelic situational concepts no similar semantic contrast appears, but *again* just always expresses plain repetition. Let us check whether this empirical fact can be accounted for by the proposed theory.

In the case of atelic states and activities, the last symbol of the imperfective concept does not mark a final boundary. This means that no result state is described but just a continuation of the state or activity phase that characterizes the situation, respectively. Consequently, it does not make a real difference in interpretation whether the adverbial gets applied to the imperfective or perfective view of an atelic situation. Below both readings are spelled out for a stative concept 'John be silly again' and an activity concept 'John swim again'.

(14)

a. [be silly(x)] $\Box^*$ [be silly(x)] [be silly(x)]$^+$ [be silly(x)]

b. [j silly] $\Box^*$ [j silly]

(15)

a. [$\exists y \neq \emptyset$ (swim(j, y))] $\Box^*$ [$\neg\exists y \neq \emptyset$ (swim(j, y))] [$\exists y \neq \emptyset$ (swim(j, y))]$^+$ [$\exists y \neq \emptyset$ (swim(j, y))]

b. [j swim] $\Box^*$ [j swim]

5 Syntax (Informal Sketch)

5.1 General Background

For reasons of space, the syntactic part of the theory can not be presented in formal detail, but we will have to restrict ourselves to giving some general ideas and informal explanations. For a full formal analysis we refer the reader to Gründer (2009) or other material to appear. The framework used there is

an adapted and extended version of Dynamic Syntax of Kempson, Meyer-Viol and Gabbay (2001).

To supplement this semantic approach by a fitting syntactic theory, the right-peripheral adverbials in question are assumed to be *orphans*. *Orphans* are constituents that are independent of their host sentence in syntax. Prosodic information, reflecting the contextual status of the constituents, is mediating between underspecified syntactic and specified semantic structure. Since the relevant information is read off locally on the constituents of the utterance, contextual principles can be put at work without having to implement heavy mechanisms on discourse level.

This idea is methodologically challenging, since in the standard grammatical systems, following the example of Chomsky, semantic interpretation is fully determined syntactically. Pragmatic considerations take place outside the real grammar formalism and after semantic processing only. And there is, for principle reason, no interaction between the different components of the grammar in a way that phonetics would mirror pragmatics and would interact with syntax in order to determine semantics. But following the considerations from the beginning of the paper, this kind of interaction is just what is needed for an analysis of the meaning of adverbial modifiers, for instance *again*.

5.2 Dynamic Scope Resolution by Prosody

In the formalism of *Dynamic Syntax*, that is used in Gründer (2009) as a formal basis, syntactic processing is seen as progressive and goal-driven enrichment of some partial, underspecified structure through stepwise parse of a string of words. Information is built up on a left-to-right basis relative to some context against which choices may be made as the construction process proceeds. Words are the processing units of the parser, and they include their syntactic information in form of a simple program that effects changes in a tree-structure that is growing top-down. For the placement of the elements in the tree, tree-addresses are used. A number of processing rules govern the integration and further processing of information.

Among the several adaptions and extensions we made to the original system of Dynamic Syntax, the most relevant one is the inclusion of prosodic information into the parsing process. This means that the input of words comes marked with respect to accent, and accent marks have influence on the processing and placement of the information inside the tree structure.

In case of right-peripheral *again* the disambiguation process intuitively works like this. At the point where scanning of the modifier is triggered, it does not actually get integrated by the syntactic rule, but its structural position remains underspecified. Now, depending on the prosodic marking of the

adverbial as plus or minus accented, the semantic information carried by the word is placed at different position inside the tree. Lower, at the level of vP, if there is no accent, or higher, at sentence level, if there is an accent on *again*. Consequently, the adverbial gets involved into the semantic form at the right place relative to the phase transition point, and therefore applies to either the imperfective or perfective view of the situation.

6 Conclusion

The paper offered an explanation of the semantic flexibility of the adverb *again* on the basis of the concept of granularity. Temporal granularity of meaning refers to changes in the degree of conceptual detail for time-related aspects of interpretation. Application of the non-ambiguous modifier to either the imperfective or perfective view of the same situation can cause the two different readings. The choice between both interpretations is not syntactically determined, but it is made relative to the semantic context that is reflected locally by the prosody of the utterance.

If one considers the results of the paper from a more general theoretical perspective, then the investigation of adverbial modifiers was shown to have theoretical depth as well as the capacity to illuminate systematic processes at the interfaces between syntax, semantics and pragmatics. Additionally, it could give a clear and concrete example for the relationship between linguistic theory and general principles of cognition.

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