

**Re- Again**  
**Structural Decomposition and Adverbial Modification**

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## Table of Contents

Abstract .....	3
1. Introduction.....	4
2. Again .....	6
2.1. Syntactic Decomposition .....	6
2.2. First Phase Syntax .....	9
2.3. The Semantics of <i>Again</i> .....	14
2.4. Accounting for the Possibilities .....	17
2.5. Some Discussion on Event Identification .....	20
2.6. The Reiterative Reading .....	22
2.7. Conclusion.....	25
3. Re- .....	25
3.1. Differences Between <i>Re-</i> and <i>Again</i> .....	25
3.2. <i>Re-</i> as a Restitutive .....	29
3.3. Some Comments on the Resultative Construction .....	31
3.4. Reiterative <i>Again</i> vs Restitutive <i>Re-</i> .....	34
4. Non-Compositional Adverbs.....	35
4.1. Quantificational Account of <i>Twice</i> .....	35
4.2. Brief Aside to Manner Adverbs. ....	37
5. Conclusion .....	38
References .....	39

### **Abstract**

This paper explores the syntactic and semantic behavior of *again* and *re-* with respect to their ability to modify components of a propositional event. It is an attempt to provide a semantic interpretation for *again* and *re-* as well as provide a syntactic model in which such a semantics will correctly generate all and only the relevant properties of these items. In that vein, I adopt Ramchand's (2003) First Phase Syntax, with some modifications, and provide a semantic and syntactic scope account for the Repetitive/Restitutive ambiguity. I also propose a middle reading, the Reiterative, which is necessary to distinguish the behavior of *again* from *re-*. While this account is far from complete, it provides an insight into a theory of *again* and *re-* that provides concrete predictions for further research.

## 1. Introduction

One long standing debate in semantics is whether one can decompose a lexical verb, such as *kill* into separate components such as CAUSE and [BECOME *dead*]. Evidence that this may be the correct approach can be found by looking at the behavior of certain adverbs, such as *again*.

- (1a) John opened the door again.
- (1b) John opened the door, and then he opened it again.
- (1c) Someone opened the door, and then John opened it again.

The sentence in (1a) is ambiguous between the reading in (1b), called the **repetitive** reading and the **restitutive** reading in (1b) (Stechow, 1996). In the repetitive reading, it seems that *again* is taking widest scope, indicating that the event of John opening the door has been repeated. In the restitutive reading, however, it appears that *again* is taking narrow scope with respect to the CAUSE event and only indicating that the resulting state has occurred before. This behavior of *again* has been used to argue for various accounts of decomposition. Attempts have been made to account for this ambiguity using structural (Stechow, 1996; Pitner 2003), lexical (Kamp & Rosseideutscher, 1994; Dowty 1979), and constraint-based (Jager & Blutner, 2000) models.

However, the behavior of *again* is far from typical. Other similar time adverbials, such as *repeatedly*, *frequently* and *twice* do not show the same ambiguity, even when one gives a suitable pragmatic context.

- (2) Having a cigarette enfeebles me frequently.

That is to say that (2) cannot mean that having a single cigarette, say a year ago, causes me to be enfeebled frequently.

Further complicating the matter is the case of the English morpheme *re-*, which seems to mean roughly the same thing as *again*, but differs both in distribution and semantic properties. Observe:

- (3a) John opened the door again.
- (3b) John re-opened the door.
- (3c) John sneezed again.
- (3d) \* John re-sneezed.
- (3e) John put the cup on the table again.
- (3f) \* John re-put the cup on the table.
- (4a) John built the engine again.
- (4b) John rebuilt the engine.
- (4c) The doctor had to rebuild my knee.
- (4d) ?The doctor had to build my knee again.

The sentences in (3) demonstrate the known fact that despite any similarity in apparent meaning, the distribution of the productive morpheme *re-* and the time adverbial *again* are not identical (Lieber, 2004, Keyser & Roeper, 1992). The sentences in (4) demonstrate a divergence of meaning. Another noted difference between *re-* and *again* is their behavior with respect to scope phenomenon.

- (5a) John opened a window again.
- (5b) John re-opened a window.

While the sentence in (5a) can be true whether or not the window John opens has ever been opened before, the window in (5b) must have been opened before. More specifically the indefinite in (5b) must take scope over *re-* while this is not required in (5a).

The goal of this paper is to account for these facts without making the somewhat vacuous claim that there are two types of *again* which have different semantics. In short I will claim that there is one lexical entry for *again* which has a stable semantics, and that the

Repetitive/Restitutive (RR) ambiguity arises or does not arise as a result of the syntactic structure in question, and the scope relationships that hold between *again* and other relevant elements in the structure. As such, this proposal will be similar in spirit to the account given by von Stechow (1996).

The structure of the remainder of this paper will be as follows. In section two I will examine the three major types of proposals current in the literature with regard to this phenomenon and attempt to demonstrate that a structural account is preferred and proceed from there. I will then provide a syntax/semantics for *again* that accounts for the RR ambiguity while avoiding some of the potential problems with previous similar accounts.

In section three I will examine the English morpheme *re-* and will provide a syntax/semantics that accounts for its distribution and meaning. In demonstrating the differences between *re-* and *again*, it will become necessary to augment our intuitive semantics for *again*.

Finally, in section four I will discuss non-decompositional adverbs, such as *twice* and *frequently* and provide a proposal for why they differ from *again*.

## **2. Again**

In this section I will argue for the particular type of account that I propose for the RR ambiguity. As it is a decompositional account, I will first argue for this kind of account over others, and then proceed to introduce the specific flavor of decomposition that I will be using in this paper. I will then propose a formal semantics for *again* and demonstrate how this semantics, along with the proposed structures, gives rise to the ambiguity.

### **2.1. Syntactic Decomposition**

This approach to the RR ambiguity assumes that *again* can take multiple scope positions in the syntactic structure. Furthermore, it is necessary that (at least) two event positions be available somewhere in that structure, and one way of accomplishing this is to assume

that the syntactic representation of a lexical verb is complex. In order for my account to function I will assume some type of structural decomposition of lexical verbs, in the spirit of previous decompositional approaches (H&K 2002, Borer 2005, Ramchand 2003). What remains is for me to demonstrate that this is the only good way to go about this endeavor, and that will be the topic of this section.

In section 2 we saw that there exist several approaches to the RR ambiguity which do not rely upon decomposition of the sort that I propose. Here I will consider three alternative approaches and attempt to provide evidence that the data do not support them. The first of these is the assumption that the ambiguity arises as the result of a sort of restricted homophony. That is to say, there are two different (but related) morphemes *again*<sub>repetitive</sub> and *again*<sub>restitutive</sub> with different semantics which account for the ambiguity.

The first argument against this approach is theoretical. Making this assumption will inevitably just give us the problem back. Take the following sentences for example (from Stechow, 1996)

- (6) Ali Baba      Sesam wieder öffnete.  
       Subj            Obj    again    opened  
       Ali Baba opened Sesame again.
- (7) Ali Baba      wieder Sesam      öffnete.  
       Subj            again    Obj            opened  
       Ali Baba opened Sesame again.

The relevant facts are that sentence (7) above only has the repetitive reading.<sup>1</sup> Assuming some sort of scope story, this might be accounted for. German is a verb final language, thus the fact that *again* precedes the object in (7) rules out the possibility that it is adjoined as low as *again* in (6). If we take the lexical ambiguity account seriously then

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<sup>1</sup> This works in English as well. Sentence (1) below is only repetitive.

- (1)    Again, John opened the window.

we have no account for this. We would need to go further and, in addition to providing a semantics for *again*<sub>repetitive</sub> and *again*<sub>restitutive</sub>, we'd also have to provide syntactic or selectional restrictions on each of them to ensure that only *again*<sub>repetitive</sub> can occur in the higher position. This requirement sheds serious doubt upon this proposal.

Another alternative is that we allow that *again* always makes the same semantic contribution, but restrict its domain of application to the semantics. In this way we could potentially still get the two readings without having to propose that verbs can be decomposed in the syntax. This is essentially the kind of proposal put forth by Dowty (1979). Unfortunately this runs into the same trouble as the lexical ambiguity account. Basically, either there is one *again* which modifies the semantics of the sentence depending on where it sits, or there are two *again*s which have different consequences on the semantics. Either way, there is no easy way to restrict *again* to a specific syntactic position depending on what it means, and even if there was a good approach, if the facts can be explained purely with structural considerations then that would provide a simpler and more parsimonious theory.

Finally, we could allow that there is only one *again*, and that the RR ambiguity arises as a result of structural concerns, but still deny that lexical verbs can be structurally decomposed. This is a more serious proposal, and deserves some consideration. Pitner (2003) provides such a proposal. In her proposal she takes the scope position of *again* to be the primary factor which determines the presupposition that it generates. She does not, however, assume that lexical verbs can be decomposed in the syntax. She instead claims that decomposition occurs at an independent level, in the semantics, and posits a relatively strict isomorphism between the semantic entities at the semantic level and certain structural positions at the syntactic level.

What will be proposed here can be taken in this spirit. I do not, for example, assume that there is some explicit BECOME and CAUSE operator which occupies some syntactic node. Regardless, it is unclear what the benefit would be of having a lexical decomposition, which is then mirrored in syntactic structure. It is unclear, for example,



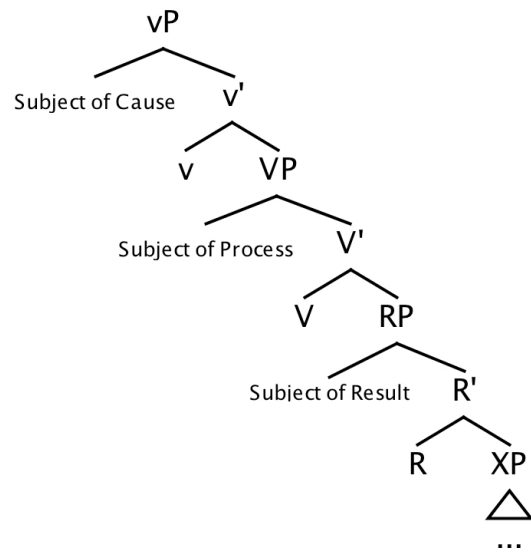
why such an isomorphism would be necessary. If semantic relationships like CAUSE and BECOME are read off of the syntax then there is no need for a separate level of decomposition. If, on the other hand, these relationships are purely in the domain of lexical semantics, then any isomorphism between structure and meaning becomes a stipulation, which is not a desirable result. It is also unclear, in such a system, how one could interpret structures consisting of nonsense verbs (Borer, 2004), or non-standard constructions such as those below.

- (8) #The conductor arrived the train.
- (9) #John wugged the marbles all over the floor.

These are examples of constructions where the verb has non-standard semantics (8), or no semantics at all (9). What is clear to any native speaker of English, however, is that these constructions, while odd, can't just mean anything at all. As a matter of fact, they are quite restricted in their meaning, and what they mean seems strongly related to the structure that they are in. If semantic predicates like CAUSE and BECOME are abstract properties of some autonomous level of computation, then it is unclear how they are being reconstructed here when structure is the only cue available. Furthermore, if structure is enough to figure out what relationships are in play, then no further level of representation is necessary.

## **2.2. First Phase Syntax**

The decomposition that I will assume for the rest of this discussion will be similar to Ramchand's (2003) first phase syntax. This model essentially assumes a tripartite structure for the first syntactic phase (i.e. the vP) in which there is a certain isomorphism between the lexical interpretation of the verb and the syntactic structure which it modifies. The fully articulated structure of the vP is given below.



(10)

As we can see, this structure provides room for three event arguments which correspond to three potential argument positions. The vP projection introduces an initiating event and licenses a corresponding INITIATOR argument. The VP projection, which Ramchand identifies as the core of the verbal meaning, introduces an event argument corresponding to whatever process is identified by the verb and provides an argument position for the UNDERGOER of that process. The lowest projection, the RP introduces the resulting state and provides an argument position for the RESULTEE.

Semantically, Ramchand takes the process event as core, and defines the initiation and result events as they relate to the process. Additionally, she assumes the predicates over events  $\text{State}(e)$  and  $\text{Process}(e)$ .

$$(11) \quad \text{Cause}(e) \leftrightarrow \exists e, e' [\text{State}(e) \ \& \ \text{Process}(e') \ \& \ e \rightarrow e']$$

$$(12) \quad \text{Result}(e) \leftrightarrow \exists e, e' [\text{State}(e) \ \& \ \text{Process}(e') \ \& \ e' \rightarrow e]^2$$

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<sup>2</sup> ‘ $\rightarrow$ ’ should be read as ‘leads to’

Thus  $e$  is a CAUSE if it is a state that leads to a process, and  $e$  is a result if it is a state and the result of a process. She can then define the various arguments with respect to  $\text{Process}(e)$  and the two derived predicates above.

- (13)  $\text{Subject}(x,e) \ \& \ \text{Cause}(e) \leftrightarrow x$  is the INITIATOR of  $e$
- (14)  $\text{Subject}(x,e) \ \& \ \text{Process}(e) \leftrightarrow x$  is the UNDERGOER of  $e$
- (15)  $\text{Subject}(x,e) \ \& \ \text{Result}(e) \leftrightarrow x$  is the RESULTEE of  $e$

The interest of her proposal is that it does not require any explicit decomposition in the lexicon, as the primitive notions are defined over the structures themselves. While interesting, this particular fact of her formalism will not be essential to our discussion. What is somewhat suspect is the use of  $\text{State}()$  and  $\text{Process}()$  as primitive notions and the stipulation that the causing event is a state. In any case, the resulting semantics of the three nodes are as follows.

- (16)  $\|R\| = \lambda P \lambda x \lambda e [P(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(x,e)]$
- (17)  $\|V\| = \lambda P \lambda x \lambda e . \exists e_1, e_2 [P(e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(x,e)]$
- (18)  $\|v\| = \lambda P \lambda x \lambda e . \exists e_1, e_2 [P(e_2) \ \& \ v'(e_1) \ \& \ \text{State}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(x,e)]$

We can see that each of these elements are of type  $\langle\langle e,t \rangle, \langle e, \langle e,t \rangle \rangle\rangle$ . By the time that they will be available for modification by *again* they will have received  $P$  and  $x$  from the lower projection (or the lexical verb in the case of  $R$ ), and the object, respectively. This reduces them to type  $\langle e,t \rangle$ , so *again* had better end up being of type  $\langle\langle e,t \rangle, \langle e,t \rangle\rangle$ .

Verbs in this system come out of the lexicon with a specification for which structural positions that they modify and a set of indices indicating a sort of linking between certain structural positions. Thus the lexical entry for a verb like *open* would be something like  $\text{open}[v, V_i, R_i]$  indicating that *open* modifies the initiation, process and the result of *openings* and that the subject of process (UNDERGOER) is the same as the subject of

result (RESULTEE)<sup>3</sup>. A verb like *dance* would be specified as *dance*[ $v_i, V_i$ ] while a stative verb, like *fear* would be *fear*[ $v$ ]. Crucially the idea here is that verbs do not *project* these syntactic positions, but modify them. While the system is a bit mysterious about what the lexical contents of verbs are, for the time being we will just take seriously the idea that the lexical specification (i.e. a list of positions the verb modifies and a set of indices linking the participants of those positions) is somehow encoded in the real-world encyclopedic (and potentially usage based) knowledge one has about the verb in question.

It is also important to discuss the semantic specifications used in Ramchand's model. Essentially, this is a syntactic model, and much if not all of the support for its structure is syntactic. One will quickly note that in the semantic specifications the 'leads to' relation carries a great deal of weight. Unfortunately this relation is not fully spelled out anywhere in Ramchand's proposal excepting a note that she borrows the convention from Hale & Keyser (1993). Luckily, it is not critical for my proposal to know exactly what the semantic content of this relation is. For the purposes of this proposal I assume the following basic semantics content.

$$(19) \quad \text{leads\_to}(e, e') \leftrightarrow Q(e) > Q(e') \ \& \ \text{the\_cause}(e', e)$$

Essentially this relation will hold if and only if the 'causing' event temporally precedes the 'resulting' event in some relevant way or other and  $e$  is *the cause* of  $e'$ . The  $Q$  above is some function which returns some relevant criteria in the event, though I am currently agnostic about its exact workings. It may for example specify that the start of  $e$  occur before the start of  $e'$  (as would be the case in opening windows, where the cause of the opening precedes the opening itself but arguably continues during the opening) or some other function. *the\_cause*( $e', e$ ) states two things. First it states that  $e$  is the cause of  $e'$  or

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<sup>3</sup> Ramchand actually ends up giving the lexical entry of *open* as *open*[ $V_i, R_i$ ], proposing a causative morpheme with a lexical entry CAUSE[ $v$ ] which can freely enter the structure wherever there is no  $v$  specified. This is to explain the causative/inchoative alternation but need not concern us here.

that it precedes *e* in the causal chain, which is agreeably a non-trivial statement. For the purposes of this paper I remain agnostic about what this will end up meaning, but there are a plethora of theories of causation around which will suffice (Dowty 1979, Wolff 2007, Hume 2000, Goldvarg & Johnson-Laird 2001, Gopnik et al. 2004). The second component is that this specifies that *e* is not just any cause, but *the* cause of *e'*. In this sense *e* is behaving like a definite.

This might sound like a serious assumption, but it isn't. Much of the work in causation ends up assuming something similar. If I trip on a rock and fall, then both a counterfactual and a Bayesian theory of causation would probably end up placing the causal blame on the rock, not, for example, a butterfly flapping its wings in China. The definiteness here is simply an extension of that, it requires that whatever the reference of *e* is, it is *the* previous event in the causal chain at the some relevant level of abstraction. This definite assumption (DA) will be important later, but the exact workings of the causal semantics is neither crucial to this proposal, nor within the scope of this paper to provide so I will leave it at that.

There are also several operations in the First Phase Syntax which are allowed subject to language specific constraints. One is causativization, which essentially freely allows the addition of a *v* projection to any structure which does not already have one. *Open*, for example is specified as  $[V_i, R_i]$ , but can become transitive. This transitivity is introduced via a verb or morpheme which is specified as  $\emptyset[v]$  and happens to be null in English (but overt in some other languages). This component needn't concern us much in the proposal that is to follow, however, so I will use  $[v, V_i, R_i]$  as shorthand for  $[v][V_i, R_i]$ .

Result augmentation is also allowed, in which an *R* is specified for a verb which does not already have one. Results can be specified either as RP's which can be introduced by a null verb-like element essentially meaning BECOME or as DP rhemes, which are event related nominal expressions that generally add telic interpretations to otherwise atelic verbs. I will take RP's and DP rhemes to be roughly equivalent, but will note them differently. A verb like *run* $[v_i, V_i]$  can be given an RP via a kind of null BECOME verb

specified as BECOME[R]. I will note this sort of thing as  $\text{run}_{\text{resultative}} [v_i, V_i, R]$ . The use of rhemes is not as clear, but is proposed as a PP or DP modifier to the event as opposed to a resulting state. As the system does not clearly provide a clear definition for a rheme I will assume that it is some sort of eventive DP or PP element which performs a similar function to R. I will note these differently, as, for example,  $\text{build}[v, V]_{\text{DP}}[R]$ .

### 2.3. The Semantics of *Again*

Semantically, this proposal asserts that there is only one lexical item *again* which contributes a single semantic value to any sentence in which it is embedded. In simple terms what we want to say is something to the effect of (20).

$$(20) \quad \text{again}(P(e)) \Leftrightarrow P(e) \text{ is true \& } P(e) \text{ has occurred before}$$

This is obviously simplistic, but it also fails in several important ways. Consider (21) below.

$$(21) \quad \text{England is north of France } *(\text{again}).$$

Certainly there have been events in the past of England being north of France, and certainly there is an event right now of the same kind, but it is still unfelicitous to claim that *England is north of France again*. To avoid this sort of problem, Stechow(1996) proposes that in addition to the idea in (20) above,  $e$  must be a maximal P event. His formalization is given below in (22).

$$(22) \quad \|\text{Max}\|(P)(e) \Leftrightarrow P(e) \text{ and there is no } e' \text{ such that } e \text{ is a proper part of } e' \text{ and } P(e') = 1$$

This will indeed solve the problem. Essentially the semantics would fail because any event of England being north of France is part of a the larger England being north of France event that has obtained since there was an England and a France. While this

solves the problem, it presents new problems. Consider the sentence below (example from Klein, 2001, though to a different purpose).

(23) Nineteen is prime again.

Nineteen, as far as anyone knows, has always been prime, and yet there are occasions in which (23) is felicitous. Imagine, to use a modified version of Klein's example, that a student is set to the task of determining which numbers are prime. After doing so they are given the same task. During this second task they might utter (23) meaning something like *nineteen is still prime*, but the ability to use *again* here to indicate that meaning is not surprising. Given the semantics in (22) this sentence would automatically be ruled out, yet it is felicitous in certain contexts in English and also in German (Klein, 2001).

Another example of where the notion of maximal event is too strong can be found from the barometer-type examples (Fabricius-Hansen, 1983), as in (24).

(24) The thermometer fell again.

Assume a context in which the thermometer fell 10 degrees on Tuesday and 10 degrees on Wednesday, crucially with no rise in between to separate the two falling events. (24) is still a perfectly felicitous sentence assuming a certain context which gives the speaker a rationale for separating them into to separate events. Assume a scientist is rather poorly monitoring the temperature inside a box and notes in his log book for Tuesday *The temperature fell* and then on Wednesday notes *The temperature fell again*. Note that there is no way to generate this sentence if we use the notion of maximal event.

Schein (pc) mentioned that such a statement might, in fact, be considered false if the scientist discovered that the temperature had fallen 20 degrees over the two days at a steady rate. This is true assuming constant observation of the thermometer for the two-day period. There are two relevant points here. First, while this intuition may be true, it does not save maximality. Even if the rate of temperature drop is bimodal the notion of

maximal event, as defined, will rule it out. In order for the sentence to come out as felicitous the temperature must have either stopped dropping or risen in between the two events, and this is not what we want. Second, for this sentence to come out false, even if the temperature drop was constant, requires more than uninterrupted observation. It requires a context in which it is difficult to construe the temperature drop as two events. As soon as one can make a case for two separate events, then it the sentence is much more acceptable. Take the following for example.

- (25) John intently watched the temperature drop steadily at 1 degree per minue for 10 minutes. Then his shift was over and Bill came along and began watching the temperature immediately after John stopped watching. Bill then watched the temperature drop steadily at 1 degree per minute for 10 minutes. In their report Bill states “John observed that the temperature dropped at 1 degree per minute for ten minutes, I then watched it do the same thing again.”
- (26) John intently watched the temperature drop steadily at 1 degree per minute for 10 minutes. He then said “If that happens again, then it will be very cold in here in 10 minutes.”

So requiring maximal events is too strong, however, this notion does sever some purpose. It is clear, for example, that if we remove maximality then we need something to replace it. This proposal will assume a semantics which replaces the notion of maximal event with the notion of non-overlapping events and introduce the notion of contextual event formation. Formally:

$$(27) \quad \text{Disjunctive}(e)(e') \leftrightarrow \forall x,y [x \text{ in } e][y \text{ in } e'] \text{ In context } c, x \neq y$$

Thus two events  $e$  and  $e'$  do not overlap if and only if no components of  $e$  are components of  $e'$  in whatever context the speaker is rationally intending to use. Given this, and a notion of temporal precedence (which will be represented by  $<$  meaning ‘precedes’) we can build a semantics for *again*.



$$(28) \quad \llbracket \text{again} \rrbracket = \lambda P \lambda e. [P(e) \ \& \ (\exists e' [P(e') \ \& \ \vartheta(e, e') \ \& \ e' < e])] ]$$

So, *again* takes an event  $e$  and some property of that event  $P$  and presupposes that there is some other event  $e'$  which is also a  $P$  event, does not overlap with  $e$  and temporally precedes  $e$ . As we can see this is of type  $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$ .

We will see later that this semantics will need to undergo slight modification but for the time being it will suffice to demonstrate how the RR ambiguity arises.

#### 2.4. Accounting for the Possibilities

Let us turn back to the basic cases of RR-ambiguity presented at the beginning.

- (29a) John opened the door again.
- (29b) John opened the door, and then he opened it again.
- (29c) Someone opened the door and then John opened it again.

Remember that the paraphrase in (29b) represents the repetitive reading and the paraphrase in (29c) the restitutive reading. Turning now to the semantics, it is clear that both of these readings are possible.

For the repetitive reading all that is necessary is that *again* adjoin to  $vP$ . The resulting semantics will do two things. First, since Ramchand's semantics build up the event from the result to the initiation, the end result of the adjoining *again* to the  $vP$  will entail all lower readings. This will be true regardless of where it is adjoined, for now we will call this the adjunction entailment principle.

- (30) **Again Entailment Principle:** When *again* is adjoined to some position in the structure  $XP$  creating some proposition  $P$ , given all alternative propositions  $Q$ , identical to  $P$  except that *again* is adjoined to a valid position c-commanded by  $XP$ .  $P$  entails  $Q$ .

Note that this is not a rule, per se, but a consequence of the semantics. That is, the presupposition generated by *again* when it is adjoined to  $vP$  entails the presupposition generated by *again* when it is adjoined to  $VP$  or  $RP$ . I state it as a principle simply for convenience, but it is worthwhile proving that this is indeed the case, as it makes no sense at all to stipulate that  $X$  entails  $Y$  if the semantics say differently.

Compositionally, the result of adjoining *again* to the RP is as follows, we will assume a sentence involving John opening a door.

1.  $\|R\|(\text{open})(\text{door}) = \lambda P \lambda x \lambda e [P(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(x,e)](\text{open})$
2.  $\|RP\| = \lambda e [\text{Open}(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(\text{Door},e)]$
3.  $\| \text{again} \|(\|RP\|) = \lambda P \lambda e. [P(e) \ \& \ (\exists e' [P(e') \ \& \ \vartheta(e,e') \ \& \ e' < e])](\lambda e [\text{Open}(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(\text{Door},e)])$
4.  $\| \text{again} \|(\|RP\|) = \lambda e. [\text{Open}(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(\text{Door},e) \ \& \ (\exists e' [\text{Open}(e') \ \& \ \text{State}(e') \ \& \ \text{Subject}(\text{Door},e') \ \& \ \vartheta(e,e') \ \& \ e' < e])]$

Compositionally, if we adjoin *again* to  $VP$  we would get the following.

1.  $\|RP\| = \lambda e [\text{Open}(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(\text{Door},e)]$
2.  $\|V\|(\|RP\|) = \lambda P \lambda x \lambda e. \exists e_1, e_2 [P(e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(x,e)](\lambda e [\text{Open}(e) \ \& \ \text{State}(e) \ \& \ \text{Subject}(\text{Door},e)])$
3.  $\|V'\| = \lambda x \lambda e. \exists e_1, e_2 [\text{Open}(e_2) \ \& \ \text{State}(e_2) \ \& \ \text{Subject}(\text{Door},e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(x,e)]$
4.  $\|V'\|(\text{door}) = \lambda e. \exists e_1, e_2 [\text{Open}(e_2) \ \& \ \text{State}(e_2) \ \& \ \text{Subject}(\text{Door},e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(\text{Door},e)]$
5.  $\| \text{Again} \|(\|VP\|) = \lambda P \lambda e. [P(e) \ \& \ (\exists e' [P(e') \ \& \ \vartheta(e,e') \ \& \ e' < e])](\lambda e. \exists e_1, e_2 [\text{Open}(e_2) \ \& \ \text{State}(e_2) \ \& \ \text{Subject}(\text{Door},e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(\text{Door},e)])$
6.  $\| \text{Again} \|(\|VP\|) = \lambda e. [\exists e_1, e_2 [\text{Open}(e_2) \ \& \ \text{State}(e_2) \ \& \ \text{Subject}(\text{Door},e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(\text{Door},e)] \ \& \ (\exists e' [\exists e_1, e_2 [\text{Open}(e_2) \ \& \ \text{State}(e_2) \ \& \ \text{Subject}(\text{Door},e_2) \ \& \ V'(e_1) \ \& \ \text{Process}(e_1) \ \& \ e = (e_1 \rightarrow e_2) \ \& \ \text{Subject}(\text{Door},e)] \ \& \ \vartheta(e,e') \ \& \ e' < e])]$

**State( $e_2$ ) & Subject(Door, $e_2$ ) & V'( $e_1$ ) & Process ( $e_1$ ) &  $e' = (e_1 \rightarrow e_2)$  & Subject (Door, $e'$ ) &  $\vartheta(e,e')$  &  $e' < e$ ]**

Comparing just the presuppositions provided by *again* (highlighted in bold for convenience). We have:

1.  $\exists e'[\mathbf{Open}(e') \& \mathbf{State}(e') \& \mathbf{Subject(Door,e')} \& \vartheta(e,e') \& e' < e]$
2.  $\exists e'[\exists e_1,e_2[\mathbf{Open}(e_2) \& \mathbf{State}(e_2) \& \mathbf{Subject(Door,e_2)} \& V'(e_1) \& \text{Process} (e_1) \& e' = (e_1 \rightarrow e_2) \& \text{Subject (Door,e')}] \& \vartheta(e,e') \& e' < e]$

We can see here that the semantics definition for the *VP* event includes the semantic definition for the lower *RP* event (relevant portions in bold for convenience). If we take seriously the notion that these events are definite, then the conjunct  $e' = (e_1 \rightarrow e_2)$  tells us that when *again* is adjoined to *VP* it presupposes that there is an event  $e'$  which includes two sub-events  $e_1$  and  $e_2$  and furthermore these subevents are *the cause* and *the result* of  $e'$ . When adjoined to  $e'$  we have only the resulting event. Since *VP* presupposition require that there be an *RP* event, which is defined in exactly the same terms, we can see that presupposition generated by adjoining *again* to the *VP* entails the presupposition generated by adjoining *again* to the *RP*. Thus the *Again Entailment Principle* (AEP) is verified in this case. A similar story can be told for why adjunction to the *vP* entails both the lower *VP* and *RP* readings.

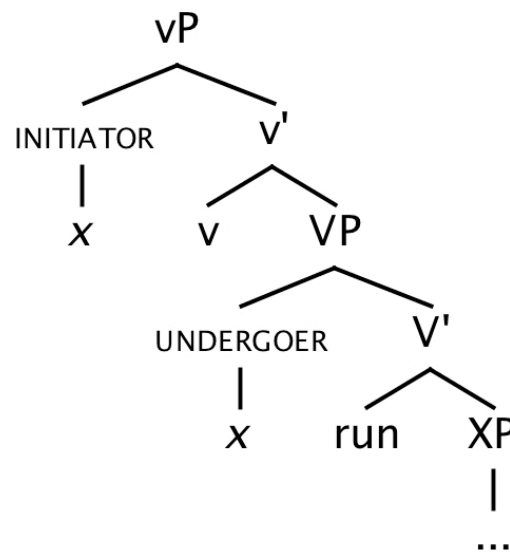
Furthermore, this seems to be the desired result. If John opened the door more than once (the repetitive reading) then the door had been opened by someone before, and the door had been in the state of openness before (the restitutive reading).

For the restitutive reading, all that needs to be done is to adjoin *again* to the lowest event providing projection, namely *RP*. In Ramchand's semantics, *R* encodes the resulting state caused by the verb, and the result is that *again* presupposes that this state has held in a non-overlapping way with the present state, sometime in the past. For the repetitive reading, *again* is adjoined to the highest projection, namely *vP*, and the result is that

*again* presupposes that the entire event, from cause to result, and including any participants, occurred in some non-overlapping way in the past.

## 2.5. Some Discussion on Event Identification

In these semantics events are identified primarily by the property P, which is some property of events (in this regard it is very similar to Stechow's system). Ramchand's first phase syntax, however, greatly articulates this P to include the sub events relevant to whichever event is being asserted, as well as the participants *for each of the subevents*. This is important, because the argument could be made that this structure overgenerates meanings, and but the way events are identified provides a solution to this problem. Let us take a process-intransitive verb, like *run*. The structure for such a verb is given below.



(31)

Our semantics would argue for an ambiguity in a sentence like (32).

(32) John ran again.

Crucially, however, the ambiguity would hinge upon whether what was being presupposed was an initial state, or a running process, not whether or not John was involved. The lexical entry for run is like dance, namely  $run[v_i, V_i]$ . Of relevance to us is that in this case the subject of cause is the same as the subject of process so wherever *again* adjoins the presupposition will come out such that John did something before. This seems to be the right result as demonstrated by the oddness of (33) below.

(33) ?Bill ran, then John ran again. (on the reading that John only ran once)

Aside from this it is somewhat difficult to tease apart the ambiguity predicted in this sentence. We will call this the again ambiguity condition.

(34) Again Ambiguity Condition: When the presuppositions generated by *again* specify different participants in the event, ambiguity is obligatory. If the presuppositions have the same participants, then stronger one is preferred.<sup>4</sup>

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<sup>4</sup> Schein (pc) considers a sentence of the following type:

(1) The robot opened himself again.

This sentence is interesting for several reasons. First, as open is specified for our purposes as  $[v, V_i, R_i]$ , the UNDERGOER and RESULTEE arguments of the predicate are the same. Further, the INITIATOR argument also happens to be the same individual as the UNDERGOER, due to the use of the reflexive.

As stated the the AAC would propose that the repetitive reading is readily available while any lower reading is dispreferred. I think this is probably true, but further exploration into this topic would be beneficial. It is unclear, for example, whether argument identity as a result of pronoun binding is the same kind of argument identity introduced in Ramchand's system. Crucially her claim is that the coindexation is a result of the encyclopedic lexical knowledge of the verb, so there is no obvious requirement that it should have the same behavior as a reflexive.

In this case, at least, all readings seem to be available, but in my intuitions the one which presupposes that *the robot* performed such an opening before is best, suggesting that perhaps there isn't so much of a difference between reflexives and verbal coindexation.

Where strength is determined in the normal way by asymmetric entailment. It is worth noting here that this is currently a pure stipulation. There are possible reasons why this might be the case. Since higher readings entail lower readings, it might be preferred to reconstruct the position of *again* at the point at which the semantics allow the correct participant to be involved in the presupposition. In this view it, one of the primary identifiers of events would be the participants involved and in this sense the first there might be a preference for the highest event which has the correct participants. This is largely speculative, however, and further work must be done to verify that this stipulation holds generally.

Additionally, one might have noted that this model predicts a three-way ambiguity. This will be the topic of the next section.

## 2.6. The Reiterative Reading

The confluence of the structures and semantics that I have proposed here present us with a problem, namely that in certain cases (i.e. those cases in which *v*, *V* and *R* are present) we will expect a three way ambiguity with respect to *again*. This middle ambiguity I will call the reiterative reading.<sup>5</sup> The full paradigm is given below.

- (35a) John opened the window again.
- (35b) Repetitive Presupposition: John opened the window before.
- (35c) Reiterative Presupposition: Someone opened the window before.
- (35d) Restitutive Presupposition: The window had been open before.

Now it is apparent that we are in a difficult situation, as we need to provide evidence that all three of these readings exist. The best evidence would be truth-functional, which can be done easily to demonstrate the validity of the Repetitive vs Restitutive readings.

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<sup>5</sup> It is important to note here that other structural accounts, such as Stechow's (1996) proposal, also predict a three way ambiguity, so this is not new. What is new is the claim that this 'middle' reading is actually available and important. It is mentioned but largely ignored in other proposals.

(36) John entered the United States again.

Assume a context where John is American, he was born in the US and then left for a vacation in France. Upon his arrival in the US sentence (36) would be true *only* in the restitutive sense. Thus, it is false that John has arrived in the US before, but true that he was in the US before.

Evidence for the middle reading is more difficult. There are two reasons for this. First is the AEP. Thus whenever the reiterative reading is true, the restitutive reading will be true. The second is a consequence of our semantics. Note that the semantics of *again* makes no comment on how the presupposition came about. Thus the restitutive reading of a sentence like (37) only presupposes that the door had been in an open state before.

(37) John opened the door again.

Thus the restitutive reading of *John opened the door*, given the AEP is true if John opened the door twice. The consequence of this is that all of the lower readings include the higher readings as a special case. This is not unlike the problems that arise when trying to provide truth functional evidence for the existence of a scope ambiguity in *Every boy loves some girl*. The reading with wide scope for *some* entails the reading with wide scope for *every*, and furthermore, the reading with wide scope for *Every* is true in one special situation in which the other reading is true. Thus it is not possible to generate a reading in which the reiterative is true and both other readings are false. We will have to look elsewhere for our evidence.

The first place to look is for verbs which are not specified for a result, and see if they are indeed ambiguous. Since these readings are difficult to tease apart if the cause and process share the same subject, we'd need to find some verb which is specified as [v,V], with the prediction being that there will be a readily available ambiguity. This seems to be the case, as with the verb *push*.

(38) John pushed the cart again.

Here the ambiguity and presuppositions are clear. This sentence can either presuppose that John pushed the cart before, or that someone pushed the cart before. Additionally, it seems to have no restitutive-like non-process reading, which is expected given its lack of an R projection.

Another potential point of evidence comes from our discussion of event identification. We noted there that whenever we have two projections which are co-indexed (i.e. share the same subject) it unclear that an ambiguity arises. We called this the Again Ambiguity Condition (AAC) Consider for example, the verb *build* specified as  $build[v, V_i, ]_{DP} [R_i]$ <sup>6</sup> and the sentence below.

(39) John built the knee again.

Crucially the restitutive reading, if it is available at all, is highly dispreferred. Regardless, this sentence is still ambiguous between a repetitive and a reiterative reading.

Another point of evidence would be to find a verb with no *v*, and a non-coindexed V and R. Such a verb should demonstrate an ambiguity between the reiterative and restitutive. Unfortunately verbs of this kind are hard to find if they exist at all.

Now I turn to another consequence of our treatment. Why does *open* seem to be compatible with all three readings? Recall that *open* is specified as  $open[v, V_i, R_i]$ . The AAC would seem to indicate that such a verb would be compatible with the repetitive reading (which it is) and the reiterative reading (which is also possible), but the restitutive reading should be dispreferred. At a cursory glance this does not seem to be the case.

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<sup>6</sup> This diverges from Ramchand's model. She specifies verbs of creation/consumption as  $[v, V]$  only. I am here changing the specification to include a result which I will claim is added by a DP *rheme* which is coindexed with the UNDERGOER.



Imagine a context in which someone builds a window such that it is open. Thus the window is in the state of being open, but no one has ever opened it before. Later it is closed and then John comes along and opens it again. This is a purely resitative reading, and it seems to go through. My personal intuition is that this structure is possible, but marked. If I were to utter a sentence with this meaning my first reaction would be to utter *John reopened the window* rather than *John opened the window again*. I will leave this discussion at that for now, as this will be the topic of the next section.

## 2.7. Conclusion

In this section we provided a syntactic and semantic model which explains the RR ambiguity. The consequences of this treatment generates a third reading, which we have called the Reiterative, and we provided some preliminary evidence that this reading might exist. In the next section we will turn our attention to the productive morpheme *re-*, which on the surface seems to have a semantics similar to *again*.

## 3. Re-

This section will examine the morpheme *re-* in its productive use in English. I will claim that the semantic contribution of *re-* is identical to *again*, but its status as a bound morpheme results in different behavior.

### 3.1. Differences Between *Re-* and *Again*

As we noted in the introduction, *re-* and *again* seem to be highly similar in what they mean, but are very different in terms of their distribution.

- (40a) John opened the door again.
- (40b) John re-opened the door.
- (40c) John sneezed again.
- (40d) \* John re-sneezed.
- (40e) John put the cup on the table again.
- (40f) \* John re-put the cup on the table.

- (40g) John built the engine again.  
 (40h) John rebuilt the engine.  
 (40i) Hello again.  
 (40j) \*Re? Hello.

The uninteresting cases are given in (40i-j), I take it as relatively uncontroversial that *re-* is morpheme bound to the verb. Thus in constructions without a verb, *re-* cannot occur.

More interesting are the cases given in (40c-f), as there is a perfectly good verb, yet *re-* makes the sentence ungrammatical while *again* does not. The reason for this, is that *again* is an adjunct which selects for something of type  $\langle e, t \rangle$ , provided that *e* is some sort of event, and returns something of the same type. This is the only real selectional restriction on *again*. *Re-* is different in that it selects for a specified result (i.e. an R, and trivially a verb since R has no semantic value without one).

Sneeze does not have a specified R, but can be provided one using a resultative-like construction in which case the sentence becomes somewhat better. Assume some sort of sneezing competition.

- (41) ?? John re-sneezed a terrible sneeze.<sup>7</sup>

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<sup>7</sup> Schein (pc) brings up the following sentence:

- (1) "A sneeze was the signal that it was still too cold to come in. At Checkpoint Charlie, Leamas sneezed and re-sneezed to be certain he was understood."  
 (John Square, *The Spy Who Came in With a Cold*, 2007).

The story in this case would be that *sneeze* is elliptical for *sneeze a particular kind sneeze* and so *re-* is acceptable due to a result augmentation process (i.e. the addition of an RP). The context given here is telling, as it provides the reference for the result of the sneezing. The sentence might be paraphrased as something like *At Checkpoint Charlie, Leamas sneezed [the signal] and re-sneezed [the signal] to be certain he was understood.*

It gets better with verbs like *run* which we recall are not specified for R. These verbs are capable of providing an R via the resultative construction. Simplifying things somewhat the structure of *run<sub>resultative</sub>* will be  $[v_i, V_i, R]$ , and this indeed makes the addition of *re-* much better, but still somewhat degraded. The degradation is a result of *re-* not modifying the verb in this instance, it is instead modifying a null resultative predicate essentially meaning BECOME.

(42) ?? John re-ran.

(43) John re-ran his shoes ragged.

The first phase syntax also provides another way of adding a position which is acceptable for *re-*, which is the addition of a DP *rheme*, which is a kind of event-related nominal complement which creates a telic interpretation for otherwise atelic verbs. This also licenses *re-*.

(44) ?? John re-ran.

(45) ?? John re-ran the race.

Thus we should modify the selectional properties of *re-* somewhat. *Re-* selects for an element  $\alpha$  of type  $\langle e, t \rangle$ , provided that the *e* is an event of some sort, where the  $\| \alpha \|$  is a result. In this system R trivially satisfies these requirements, as does a DP *rheme*.

What about sentences (3e-f)? This is related to another problem, namely of adding a path RP to an unergative verb. Consider the following.

(46) John ?(re)ran Mary to the store.

Ramchand's syntax supposes that the structure of this sentence is essentially equivalent to a resultative. The major difference being that the RP in these constructions is licensed by the preposition, *not* the verb. Observe:

(47a) John ran in the woods.

(47b) John ran into the woods.

Structurally a sentence like (47a) is assumed to not have an RP at all, thus we would expect a problem with *re-* modification, which is indeed the case. Modification by *re* in (47b) is somewhat better, though not perfect. Structurally this is predicted if we modify our selectional requirements for *re-* to include the hopefully uncontroversial statement that *re-* has a very strong preference toward modifying verbs. Technically, given the structures for these sentences, (47a) should not be modified by *re-* at all, which seems correct. While (47b) would come out as in (48) below.

(48) John ran re-into the woods.

(49) John reran into the woods.

This is not a valid position for *re-* to occur, thus producing (49), which is somewhat degraded in meaning.

Turning back to our problem with ditransitive *put* the explanation is readily available. *Re-* in this configuration is modifying the R, which is headed by *to* not by *put*, therefore the sentence is degraded. The same story can be told for verbs like *kick* and *give*, which are decidedly marked with *re-* modification. It's important to note that the (in)ability for *re-* to modify these constructions is not completely ruled out, so long as one can reconstruct where *re-* is supposed to be interpreted despite the fact that it does not surface in that location. For verbs like *give*, *put* and *send*, which have a somewhat standard ditransitive interpretation, this is not too much of a problem, and whether or not an individual likes *re-* modification is a matter of what they're used to.<sup>8</sup>

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<sup>8</sup> Schein (pc) notes that the following sentence is fine, despite our discussion of *put*:

(1) John replaced the cup on the table.

(2) \*John re-put the cup on the table.

For other verbs, like typically transitive verbs used as benefactives this problem does not arise at all. Observe that both sentences below are fine.

(50) John rebaked the cake for Mary.

(51) John rebaked Mary the cake.

In this case the R in question is specified by the verb, so there is not an issue. We are now in a good position to propose the constraints on the presence of *re-*.

Constraints on Re- Modification: Re- is capable of modifying any element  $\alpha$  provided that  $\alpha$  is of type  $\langle e,t \rangle$ , where  $e$  is some sort of event, and that the interpretation of  $\alpha$  is a result.

Constraints on the Appearance of Re: Re- occurs in preverbal position, on the verb that it modifies. If it does not modify a verb, it will occur on the closest verb in the construction, and the grammaticality of the sentence will be degraded.

### 3.2. *Re-* as a Restitutive

Our treatment of *re-* makes the prediction that *re-* will only ever have the restitutive reading. This seems to be the consensus in the literature (Williams, 2006; Marantz,

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It is worthwhile to note that *replace*, in my intuition, seems somewhat more idiomatic than something like *reopen*. This notwithstanding, however this behavior is not surprising. Sentence (2) has a very different structure than sentence (1). First of all the constituent *on the table* is an obligatory complement in (2) but not in (1).

(3) John carefully placed the cup.

(4) \*John carefully put the book.

This suggests to me that the locative *on the table* is not the relevant RP for *place*. I suggest that the RP is actually being modified by the verb, not the preposition. Some evidence for this is that *replace* seems to carry a very specific truth conditions. If I take a book from a library shelf and then put it back onto the shelf in a different place, then I am not *replacing the book on the shelf*.

2007), but it is worthwhile spending some time making sure that this assumption is correct.

Theory internally it seems to work out well, as the presence or absence of R coresponds to the presence or absence of a result. Thus we cannot get *re-* modification over stative verbs like *fear*, for example. If there is no R, there is no result, and therefore there is no resulting state to presuppose.

Providing concrete evidence to this effect is difficult, again due to the AEP. Thus *John reopened the window* is trivially true if John opened the window twice. The better evidence is can be found if we compare *again*, which we have claimed to have a reiterative reading available and see if there is some difference between a typical reiterative reading of *again* and the restitutive *re-*. I will leave this for now and address this issue in a later section.

Assuming that *re-* only modifies the result also makes other predictions, however, which are borne out. It predicts for example that *re-* merges into the structure at a lower position than the case position of the object. Thus we would expect that indefinite objects would always have wide scope with respect to *re-*. This is the case.

(52) John reopened a window.

We also expect that adverbs which modify the process, but not the resulting state will take scope over *re* and thus not be part of the presupposition (Williams, 2006). This is also the case.

(53) John reopend the window quickly.

Finally we would expect that any result which is part of the verbal meaning, or c-commanded by the R position would be part of the presupposition, but that results which

are not in this position would not be presupposed by *re-* (Williams, 2006). This becomes a problem:

(54) John repainted a wall red.

Crucially the sentence above does not presuppose that the wall was in a state of being red-painted before, only that it was in a state of being painted before.

### 3.3. Some Comments on the Resultative Construction

Resultatives exhibit very strange behavior with respect to *again* and *re-*. Take the following sentences.

(55) John painted the door brown again.

(56) John repainted the door brown.

The first thing to note is that sentence (55) presupposes (at least) that the door was brown at some previous point in history. (56) does not, it only presupposes that the door in question was painted at some previous point in history. Crucially for this proposal, (56) does not necessarily presuppose that it *had been painted by someone* before, only that it was in a state compatible with the process of painting (i.e. it had some paint material applied to its surface in a paint-like way).

The interesting point is that (55) is fine even if the door was not previously painted. Assume that the door is made of a brown material (like dark wood), then at some point it is scorched black by fire. John then restores it to its original brown state by painting it brown again. Crucially the door was never painted in the first place. This is not a possible meaning for (56), and considering the proposal here, that is somewhat mysterious.

There are two problems here. The first is a problem with the behavior of *again*, which should scope over the R instantiation of *paint* and by stipulation over whatever position the resultative occupies. This will automatically generate the presupposition that the door was previously brown, but will also generate the additional information that the door was previously painted. This, however, does not seem to be the case.

The second issue regards *re-*. Given our proposal it is unclear why *re-* does not also presuppose *brown*. Marantz (2007) proposes that *re-* attaches to the object DP, while he doesn't provide a concrete semantics, it does not seem like this is the case.

(57) The doctor rebuilt my broken knee.

Crucially (57) does not presuppose that the doctor restored my broken knee to a broken state. Of interest here, however, is Marantz's (2007) proposal that *re-* cannot occur with small clauses. His argument is that a predicate like *painted the wall red* can be structured as [*painted [the wall red]*] or as [*painted [[the wall] red]*] where *red* is in a small clause in the former and an adverbial modifier in the latter. If we take seriously the idea that *re-* cannot cope with small clauses then we have an explanation for why *re* does not include the resultative predicate in its interpretation. Namely because it forces the adjectival reading, which results in the specified result being outside of the scope of *re-*. This still doesn't explain, however, why *again* obligatorily takes the small clause reading.

What I will propose here is unsatisfactory, but seems to work. I will assume that Marantz's story is correct, in that *re-* forces a 'process reading' of the resultative. Thus *John painted the wall red* will end up coming out as something like *John red-painted the wall*. Since the end result is the painting, not the process of *red-painting*, *re-* will not presuppose the redness.

In the case of *again* the redness is presupposed for one of two reasons. Either the resultative is in a small clause, in which case it will scope below the lowest possible adjunction position for *again* and thus be part of the presupposition, or it modifies only



the process, in which case *again* could theoretically scope below it, but due to the specification of *paint*[ $v, V_i, R_i$ ] and the AAC, this reading will be dispreferred if it is available at all. As for why the state of being painted is not presupposed, I am not certain. It may be the case that the RP in this particular construction is replaced by the resultative small clause, or that *again* is able to scope only over the small clause itself, allowing such a reading which presupposes *brown* but not *paint*. This is largely stipulative, however and requires further research, specifically into the exact structures of different kinds of resultatives in the First Phase Syntax system.

We now turn our attention to the following sentences

- (58) John painted a wall red again.  
 (59) John repainted a wall red.

What is important to note is that (59) presupposes that there is one wall, it had been painted before, and was later repainted by John such that it became red. This is expected, given our discussion that *a wall* always takes wide scope with respect to the presupposition.

Sentence (58) is interesting, however, as it has two readings depending on whether *a wall* takes narrow or wide scope with respect to the presupposition. This is also explained by our semantics. The first thing to note is that whatever the scope of *a wall*, (58) will (at least) assert that *x* was red-painted now, and the presupposition that *x* was red-painted. If *a wall* has wide scope then the resulting meaning will be something like in (60), while narrow scope reading will be something like in (61)<sup>9</sup>.

- (60) For some wall, John **red-painted it**, and again(**red-painted it**)  
 (61) John **red-painted some wall**, and again(**red-painted some wall**)

---

<sup>9</sup> The semantics here are highly simplified for clarity.

Crucially, in (60) the presupposition assumes that the wall in question was red before, and John restored it to being red. In (61) there are two possibilities. It could be the case that there are two walls, and John painted each of them red. If this is the case then there is no need to worry about whether the walls were red before, as the assertion and presupposition are both satisfied. In the special case, where *some wall* in the assertion and *some wall* in the presupposition of (61) both pick out the same wall, then we basically get the reading in (60). The intuition that if it was the same wall, that wall must have been red before, falls out in the content of the presupposition.

### 3.4. Reiterative *Again* vs Restitutive *Re-*

The example that we will use here will need to be unambiguously restitutive. For this purpose the verb *build* will be useful. Recall that *Build* is specified as  $[v, Vi]_{DP}[Ri]$  and due to the AAC will disprefer the resitative reading in favor of the repetitive. Our account for *re-* has no such option, it is only resitative. This prediction is borne out.

(62a) Doctor House built my knee again.

(62b) Doctor House rebuild my knee.

Sentence (62a) is strongly preferred to presuppose that, among other things, my knee was built twice. Sentence (62b) on the other hand, does not. It only presupposes that my knee existed in some state compatible with building, and that the good doctor restored it to that state.

While this works, it is somewhat unsatisfactory, primarily because of the apparent variable behavior of *again* with respect to this kind of reading. Recall our discussion of the reiterative reading of *John opened the window again*, in the context in which the window was built open. Of interest here is that while the First Phase Syntax specification for transitive *open* and *build* appear to be identical, there is something more that needs to be said regarding these verbs. Namely, *build* is a verb of creation, and the end result of a *building* is not the same as the end result of an *opening*. Build, in this system is modifies only  $v$  and  $V$ , with  $R$  provided by a DP rheme (i.e. an eventive DP which specifies the

end result). Given this fact, the specification for *build* and other verbs of creation ends up looking like the specification of *open*, namely  $[v, V_i, R_i]$ , but in the case of *build* the R is provided not by the verb itself, but by rhematic material. We thus might expect a difference in behavior with respect to *build* and *open*. Apart from this observation, however, we are stuck, as the facts about how *again* reacts to these different structures is simply stipulative.

#### 4. Non-Decompositional Adverbs

In this section I will examine the adverb *twice*, which despite being similar to *again* in many respects, does not exhibit ambiguity. I will propose that adverbs like *twice* and *frequently* are, unlike *again* and *almost*, inherently quantificational in nature. I will argue that it is this property of these adverbs that accounts for the lack of ambiguity. As it is not within the scope of this paper to provide a semantic account for every adverb in existence, this section will primarily focus on *twice* and be notably brief.

##### 4.1. Quantificational Account of *Twice*

Sentence (63) below is not ambiguous.

(63) John opened the window twice.

(64) John opened the window again.

I will assume that *twice* here has a semantics which makes this sentence roughly equivalent to *John opened the window two times*. On this account *twice* would be of type  $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$ , where it essentially takes some event and asserts that said event has happened two times. In this regard it is very similar to *again*.

*Twice* differs from *again* in two important ways. First, *twice* adds information to the assertion. To utter (63) asserts that *John opened the window* has occurred two times. *Again* adds nothing to the assertion. Sentence (64) asserts only that John opened the

window. The contribution of *again* is a presupposition that such an event has occurred before. Secondly, *again* does not quantify over the event in question in any way, while *twice* does.

The former point is not of much help, since not all adverbs with access to the lower event positions are presuppositional in nature. *Almost*, for example is not necessarily entirely presuppositional, nor are manner adverbs. The latter point, however, is important. Essentially, the claim here is that the lower events specified in the structure are given a definite interpretation by the structure. Thus a sentence like John opened the window could be paraphrased as:

- (65) There was an opening event, and *the cause* of that event was something John did, *the process* of that event was an opening and *the result* of that event was the door being open.

The failure of adverbs like *twice*, or *frequently* to exhibit ambiguity is due to the same factors that prevent structures like *\*two the cat* or *\*the cat is two* from coming out correctly<sup>10</sup>. Namely quantification over definite singular items is not allowed. Thus these

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<sup>10</sup> Schein (pc) comments that in certain situations arithmetic predicates can apply to definites:

- (1) The apostles are twelve.

This is somewhat different to what I'm claiming however. In (1) the arithmetic predicate is indicating the numerosity of *the apostles*. I take (1) to mean something like (2) while remaining somewhat agnostic as to what it looks like structurally.

- (2) The apostles are twelve [apostles].

With respect to events what I am claiming is more akin to the following distinction.

- (3) The world wars are two.  
 (4) ?? World War II happened two times.

(3) Is fine, as it is stating that there is a definite reference *world\_war(x)* and there happen to be two events which satisfy this reference. *Twice* is somewhat different. It is not

adverbs are able to quantify over the event as a whole (which is not inherently definite), but not any of the subparts of that event.

#### 4.2. Brief Aside to Manner Adverbs.

I have mentioned manner adverbs several times, and it is tempting to provide a unified account of *again* and manner adverbs like *quickly*, as they seem to be doing similar things in a certain regard.

(66) John opened the window again.

(67) John opened the window quickly.

Both sentences above are ambiguous, and in both cases the ambiguity hinges upon whether the adverb is interpreted as modifying the higher causing event (i.e.  $v$ ) or the lower process event (i.e.  $V$ ). While this is interesting it is simply not within the scope of this paper to fully address. One important note is that manner adverbs do seem to entirely lack a restitutive-like reading, having only readings coresponding to the repetitive and reiterative. This may be an argument for changing our semantics of CAUSE from (68) to (69), or perhaps (70).

(68)  $\text{Cause}(e) \leftrightarrow \exists e, e' [\text{State}(e) \ \& \ \text{Process}(e') \ \& \ e \rightarrow e']$

(69)  $\text{Cause}(e) \leftrightarrow \exists e, e' [\text{Process}(e) \ \& \ \text{Process}(e') \ \& \ e \rightarrow e']$

(70)  $\text{Cause}(e) \leftrightarrow \exists e, e' [e \ \& \ \text{Process}(e') \ \& \ e \rightarrow e']$

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claiming that the argument that it is predicated of is a unit which consists of a certain numerosity of entities. It instead is asserting that the argument in question has occurred two times. If that argument is a definite then this cannot be true. It is worthwhile noting that this is the case even for propositional events that are definite, not just for the lower events.

(5) \*England won the world cup in 1966 twice.

(5) is bad because of what we know about world cups, specifically that we know that they don't happen more than once in a year and so *the* event of England winning in 1966 is *the one and only* event of them winning in 1966. *Twice* is bad here, because the event mentioned in the proposition has definite properties.

This wouldn't really have far reaching consequences as far as our account of *again* is concerned, but would require some reworking of the syntax. Particularly Ramchand's (2003) account of stative predicates.

For now I will leave it at that and leave this matter for further research.

## 5. Conclusion

This proposal has provided a syntactic and semantic account for the ambiguous behavior of *again* and has attempted to extend this account to *re-* in English. The model proposed here adopts Ramchand's (2003) First Phase Syntax, and provides concrete predictions regarding the behavior of *again* and *re-* in English. Additionally, as the First Phase Syntax was proposed as a universal structure, with a great deal of cross-linguistic stability, this account makes concrete predictions regarding the behavior of *again-like* items in other languages. In so far as these predictions are borne out in the data, this theory is a success.

The primary purpose of this paper, however, was not to provide an absolute theory of *again* cross-linguistically, but to provide a broad overview of the problems and behavior of *again*, and of *re-* in English and to make an attempt at providing a single unified semantics for these items which accounts for this behavior. The result of this endeavor is the current proposal, however, it is far from complete. Several components of the proposal are simply stipulations, which ideally should be verified independently of this model. Additionally, the model brings several components of the First Phase Syntax model into question. These issues also need to be addressed.

The hope is that this may serve as a structure upon which a more elaborate model may be built, which may incorporate other adverbials with similar behavior, such as manner adverbials and terms such as *almost*. Such an account is beyond the scope of this paper, however, and will be left for further research.

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