

Another additive particle*

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Abstract

It is shown that *another* has an additive interpretation when it combines with Measure Phrases or Numeral Phrases. A number of discourse sensitive properties of additive *another* are studied, and it is argued that these are best accounted for by assuming that additive *another* is anaphoric to a Question Under Discussion, in a model of discourse inspired by Roberts 1996 and Büring 2003.

Keywords: Additivity, discourse markers, question under discussion

1 Introduction

In this paper I study two distinct uses of the word *another*. The first, illustrated in example (1), is quite common and can be thought of as a combination of an indefinite determiner with the adjective *other*:

- (1) A man came in. Another man went out.

The second use is certainly less common: *another* introduces a measure phrase or a numeral noun phrase:¹

- (2) The shelves are another 3 feet wide.
(3) There are another 2 millions street cats in this country.

I propose that *another* is ambiguous and that two different, though related, lexical items underlie these two different uses. Although I will propose an analysis for each use of *another*, my interest really lies in the second one, which I will call additive

* I am grateful to Martin Hackl, Irene Heim, Danny Fox, and the audience at a LF-Reading Group at MIT for their comments. All errors are mine.

¹ In the rest of this paper, I will make a distinction between Measure Phrases (MP), such as *3 feet*, and Numeral Noun Phrases (NumP) such as *3 men*. The distinction is a bit misleading, since *feet* is a noun, and *3 feet* is therefore a numeral noun phrase too. I will nonetheless maintain the terminological distinction. To sum up, whenever I write ‘Numeral Noun Phrase’, the reader should think ‘Numeral Noun Phrase whose head is not a unit name or otherwise measure noun’.

another for reasons that will become clear in the next section. There are two reasons for this preference. Firstly, additive *another* appears to be a member of a wider class of additive particles that also includes expressions such as additive *more*, *further*, or *in addition to*, and which has become the focus of semantic investigations only recently (see [Greenberg 2010](#), [Thomas 2010](#) and references therein). Secondly, I think that additive *another* is anaphoric to the Question Under Discussion, in the sense of [Roberts \(1996\)](#). [Beaver & Clark \(2008\)](#) have already proposed that some lexical items “are grammatically constrained to pick up the Current Question,”² and [Zeevat \(2003a\)](#) as well as [Zeevat & Jasinskaja \(2007\)](#) have explored a similar proposal in their analysis of presupposition triggers as markers of discourse relations. In this paper, I show that the study of additive *another* provides us with an additional argument in favor the existence of ‘grammatically constrained’ anaphora to the QUD.

2 Non-additive pre-nominal another

I do not know of any analysis of pre-nominal *another* in truth-conditional semantics. There are however analyses of adjectival uses of *other*. [Kamp \(2001\)](#) offers a detailed analysis of the meaning of *other* in the following discourse:

- (4) I gave the workers a generous tip. One thanked me. The other one left without saying a word.

From the last sentence of (4), we can infer that there were two workers. Kamp traces this inference to the interaction between the meanings of the definite article *the*, the adjective *other* and the NP *one*. *One* is anaphoric to the NP *workers*, although it is itself singular. It is reasonable to assume that *other one* denotes a property of singular workers different from α , where α is a contextually salient worker. This, together with the meaning of the definite article (notably the uniqueness presupposition it triggers) derives the inference that there were two workers. Following this reasoning, we analyze *other* in the following way (where \otimes denotes the overlap relation)³:

$$(5) \quad \llbracket \text{other} \rrbracket^{g,c} = \lambda y_e. \lambda P_{(e,t)}. \lambda x_e : P(y). \neg x \otimes y \wedge P(x)$$

The internal argument of *other* is a silent pronoun,⁴ whose reference must be resolved anaphorically. This predicts correctly that *other* will be infelicitous in contexts that do not provide a suitable antecedent. The referent of this pronoun is

2 ‘Current Question’ is how Beaver and Clark refer to the Question Under Discussion

3 Kamp’s original analysis is laid out in DRT. We refer the reader to [Kamp 2001](#) for more details.

4 An argument for treating it as a pronoun is that it can be bound by quantifiers, as in the following example: *Everyone on the board of directors distrusts the other members.*

presupposed to be in the denotation of the sister NP of *other*. In the case of (4), this amounts to the presupposition that the context provides a salient individual who is a worker. The reader can verify that this presupposition passes the classical tests.⁵ *Other* also contributes the assertion that the referents of its two individual arguments do not overlap.

This analysis can be extended to non-additive uses of pre-nominal *another*. Consider the following example:

- (6) A: How many talks on Chinese languages were given at the conference?
B: Only two. Franz gave a talk on classifiers in Cantonese. Another semanticist gave a talk on NPIs in Mandarin.

I contend that *another semanticist* in example (6) triggers a presupposition that the context provides a salient individual who is a semanticist. This is shown by the fact that the last sentence of (6) is infelicitous if Franz is not a semanticist and the context provides no other salient semanticist. Projection tests (example (7)) and local satisfaction tests (example (8), assuming it is known that Franz is the other semanticist) confirm this analysis:

- (7) It is possible that another semanticist gave a talk on NPIs in Mandarin.
(8) Either Franz was not at the conference, or another semanticist gave the talk on NPIs in Mandarin.

Another in example (6) also contributes an assertion that there is a semanticist who is different from (i.e. does not overlap with) this salient individual. That non-overlap is asserted rather than presupposed is shown by the lack of projection out of the complement of the modal expression in the following example:

- (9) Franz gave a talk on classifiers in Cantonese. It is possible that another semanticist gave a talk on Mandarin.

In addition, the reader can verify that the last sentence of (6) is false, rather than infelicitous, if the author of the talk on NPIs in Mandarin is not a semanticist.

I propose that non-additive *another* is a combination of an existential quantifier (contributed by the indefinite prefix *an-*) and adjectival *other*:

- (10) $[_S [_{QP} [_Q \text{ an- }] [_{NP} [_{AdjP} \text{ other } pro_i] [_{NP} \text{ semanticist }]]] [_{VP} \text{ gave a talk } \dots]]$
(11) $\llbracket \text{an-} \rrbracket^{g,c} = \lambda P. \lambda Q. \exists x [P(X) \wedge Q(x)]$
(12) $\llbracket \text{other} \rrbracket^{g,c} = \lambda y_e. \lambda P_{(e,t)}. \lambda x_e : P(y). \neg x \otimes y \wedge P(x)$
(13) $\llbracket [\text{an- } [[\text{other } pro_i] \text{ semanticist }]] \rrbracket^{g,c} = \lambda Q : \text{semanticist}'(g(i)). \exists x [\text{semanticist}'(x) \wedge Q(x)]$

⁵ Projection: *It is possible that the other one left without saying a word* and local satisfaction: *Either there was only one worker, or the other one left without saying a word.*

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3 Another with Measure Phrases

In the following discourse, the use of *another* signals that the width of the shelves must be added to some other measure, here the width of the cabinet. Let us call the former the asserted measure, and the latter the backgrounded measure:

- (14) A: How wide are the cabinet and the shelves together?
B: The cabinet is 4 feet wide. The shelves are another 3 feet wide.

In this section, I describe four properties of *another MP* that relate to the backgrounded and asserted measures.

Property 1 *Another MP* is felicitous only in contexts that provide a salient backgrounded measure. This is illustrated in example (15):

- (15) Context: At Ikea, a customer A asks a vendor B about a set of shelves on display:

A: How wide are the shelves?
B: They are (#another) 3 feet wide.

The use of *another* in B's answer is infelicitous. This can be explained by assuming that *another MP* is felicitous only in contexts that provide a salient measure to which *another MP* is anaphoric. Typically, this requirement will be satisfied by the mention of a specific measure in a previous utterance, as in example (14). However, the following example shows that this is not a necessary condition:

- (16) Context: A is looking for a cabinet at Ikea. He wants to put it next to the shelves in his living room, between the sofa and the desk. He calls his roommate B to get his opinion:

A: I've seen a really nice espresso cabinet. Do you think we will be able to put it between the sofa and the desk?
B: I don't think so. No matter how narrow your cabinet is, the shelves are another 3 feet wide.

B's uttering *no matter how narrow your cabinet is* makes the width of the cabinet salient, without mentioning a specific measure, and without entailing that the width of the cabinet is known by the discourse participants.

Property 2 The acceptability of *another MP* depends on the form of the Question Under Discussion. Consider the following dialogue:

- (17) A: How wide are these two pieces of furniture together?
 B: The cabinet is 4 feet wide. The shelves are another 3 feet wide.
- (18) A: How wide are these two pieces of furniture separately?
 B: The cabinet is 4 feet wide. The shelves are (# another) 3 feet wide.

Another is felicitous only in an answer to a question about the combined widths of the shelves and the cabinet. The use of *another* is infelicitous when answering a question about the respective widths of the two pieces of furniture. Assuming a model of discourse in which every assertion is interpreted as an answer to an explicit or implicit Question Under Discussion (cf. Roberts 1996), I take it that *another MP* requires that the sum of the asserted and backgrounded measures is an answer to the QUD.⁶ This hypothesis also accounts for the infelicity of the use of *another* in the following discourse:

- (19) A: How tall are your brothers?
 B: John is 5 feet tall. Bill is (# another) 6 feet tall.

Although it is possible to add people's heights, it is clear that (unless stated otherwise) A is not asking for the cumulative height of B's brothers, but for their respective heights.

Property 3 Addition must be defined over the backgrounded and asserted measures. This is shown by the following dialogue:

- (20) A: Is my *Cuba Libre* well chilled?
 B: Well, the rum is 50°F and the Cola is (#another) 40°F.

In (20), A is obviously not asking about the respective temperatures of the rum and the Cola, but rather about the temperature of the cocktail made with these two drinks. Yet, the use of *another* in B's answer is infelicitous. An intuitive explanation is that in order to use *another MP* felicitously, it must be possible to add the backgrounded and asserted measures meaningfully. And although the temperature of the *Cuba Libre* is a function of the temperatures of the rum and of the Cola, the relevant function is not addition. As a matter of fact, temperature is not an additive function.

⁶ This claim will be made more precise in section 5.

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Property 4 The object from which the backgrounded and asserted measures are mapped must not overlap. Consider the following dialogue:

(21) Context: $\overline{AC} = \overline{BD} = 2in$

$$A \text{ --- } B \text{ --- } C \text{ ---} \rightarrow D$$

A: How long is AD ?

B: Well, AC is 2 inches long, and BD is (# another) 2 inches long.

The segments AC and BD are parts of AD . A is interested in knowing the length of AD rather than the respective lengths of its parts. Yet, *another* is not licensed. I assume that this is so because AC and BD overlap, and therefore the sum of their lengths is necessarily different from the length of AD . One might hypothesize that *another MP* presupposes that the backgrounded and asserted measures are mapped from non-overlapping objects. The following example shows that this is not correct:

(22) Perhaps though the most stylish part of the system is the large control unit which stands about 8 inches high by 3 inches wide and another 6 or so inches deep.⁷

Surely, the control unit overlaps with itself. What licenses *another MP* is the fact that the sum of the measures of the CU in each of its three dimensions provides a measure of how big the CU is, which is the underlying QUD in this example. Therefore, it appears that the requirement of non-overlap in (21) is better analyzed as a consequence of the constraint that *another MP* imposes on the QUD: *another MP* is infelicitous in (21) because we cannot accommodate a QUD that can be answered by adding \overline{AC} and \overline{BD} . The question *How much is $\overline{AC} + \overline{BD}$?* would be congruent to such an answer, but it cannot be accommodated in this context.

Wrapping up I will now propose a very informal analysis of sentences that fit the schema *DP is another MP Adj*.⁸ A proper analysis will be spelled out in section 6.

(23) *DP is another MP Adj* asserts that *DP is MP Adj* and is felicitous only if:

- a. The QUD is *How Adj' is X*, for some salient X and Adj'
- b. There is a salient measure in the common ground (the backgrounded measure)
- c. Adding the backgrounded and asserted measures answers the QUD

⁷ From the Internet on May 06, 2011, http://www.ciao.co.uk/Typhoon_Acoustic_2_1_Towers_PC_multimedia_speaker_system__6549655.

⁸ *DP*, *MP* and *Adj* are understood as placeholders for expressions of the relevant category.

At this point, it should be noted that the meaning of non-additive pre-nominal *another* and that of *another MP* are significantly different. Both expressions trigger a presupposition that the context provides a salient entity of some kind (individual or measure). However, non-additive pre-nominal *another* asserts non-overlap and is not sensitive to the QUD, while *another MP* presupposes non-overlap and is sensitive to the QUD. Furthermore, while non-additive pre-nominal *another* presupposes that the backgrounded individual has the property denoted by its sister NP, *another MP* does not presuppose or assert that the backgrounded measure has the property denoted by the MP: *the shelves are another 3 feet wide* does not presuppose that the backgrounded measure is *3 feet* (nor does it presuppose that the backgrounded measure is mapped from the width of some object).

In the next section, I show that the same differences are observed between non-additive prenominal *another* and additive pre-nominal *another* with a numeral phrase (abbreviated *another NumP*).

4 Another with Numeral Phrases

In the following examples, *another* is interpreted similarly to additive *another* with measure phrases:

- (24) The weakness of the state contrasts with its omnipresence. There are about half a million civil servants in the country and another 200,000 policemen and soldiers.⁹
- (25) Talk about the unpleasant feeling of losing hair and over 43 million men and another 21 million women in the United States alone would definitely agree with you.¹⁰
- (26) It rarely warrants mention amid the reams of news flowing from the region, but the streets of Israel are quite literally overrun with homeless cats and dogs. “It’s huge,” says veterinarian David Cohen, head of the Shalva Animal Care Clinic in Herziliya. “There are about 1 million street cats and another 250,000 street dogs in this country.”¹¹

In all these examples, *another* is anaphoric to a contextually salient individual, as shown by the infelicity of the following examples uttered out of the blue:

- (27) #The weakness of the state contrasts with its omnipresence. There are another 200,000 policemen and soldiers.

9 From the Internet on May 06, 2011: <http://www.crisisgroup.org/en/regions/africa/central-africa/dr-congo/congos-peace-miracle-or-mirage.aspx>.

10 From the Internet on May 06, 2011: <http://www.hair-loss-guide.org/>.

11 From the internet on May 06, 2011: <http://www.jewishtoronto.com/page.aspx?id=38943>.

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- (28) #Talk about the unpleasant feeling of losing hair and another 21 million women in the United States alone would definitely agree with you.
- (29) #“It’s huge,” says veterinarian David Cohen, head of the Shalva Animal Care Clinic in Herziliya. “There are another 250,000 street dogs in this country.

However, the interpretation of *another NumP* is more similar to the interpretation of *another MP* than it is to that of non-additive pre-nominal *another*. Firstly, note that these sentences are felicitous even if the backgrounded individual does not have the property denoted by the Noun Phrase that *another* modifies: the antecedent of *another 200,000 policemen and soldiers* in (24) is *civil servant*, that of *another 21 million women* in (25) is *43 million men*, and that of *250,000 street dogs* in (26) is *1 million street cats*. *Another NumP* differs from non-additive pre-nominal *another* in this respect: *I saw another dog* certainly presupposes that the antecedent of *another dog* is a *dog* too.

Secondly, these sentences do not assert that the backgrounded and asserted individuals do not overlap, but rather they presuppose it. This claim is supported by two tests of presuppositions: the *Hey, wait a minute, I didn’t know that P!* test (example (30)), and the overt disagreement test (example (31)):

- (30) A: How many casualties should we report?
B: Well, the explosion injured all the military, and it deafened another 5 medics.
A: Hey, wait a minute! I didn’t know that the medics were civilians.
- (31) A: How many casualties should we report?
B: Well, the explosion injured all the military, and it deafened another 5 medics.
A: #That’s not true, the medics are all from the army.

Finally, uses of *another NumP* are felicitous only if the total cardinality of the backgrounded and asserted individuals is a QUD, as shown by the contrast in acceptability between the following examples:

- (32) Context: Micha wants to know about homeless pets in Israel.
- A: How many homeless cats and dogs are there in Israel overall?
B: There are about 1 million street cats, and another 250,000 street dogs.
- (33) Context: Micha wants to open a shelter for homeless pets in Israel, but he doesn’t want to accept both cats and dogs, as he thinks they will fight. Therefore, he decides to open his shelter to the most numerous population among the two.

- A: How many homeless cats and dogs are there in Israel, respectively?
 B: There are about 1 million street cats, and (#another) 250,000 street dogs.

The following informal analysis of *another NumP* capture these similarities:

- (34) *Another NumP VP* asserts that *Another NumP VP* and is felicitous only if:
- The QUD is *How many NP' VP'*, for some salient *NP'* and *VP'*
 - There is a salient individual in the common ground (the backgrounded individual)
 - Adding the cardinalities of the backgrounded and asserted individuals answers the QUD

In the next section, I examine the relation of *another* to pitch accent and Questions Under Discussion in more detail.

5 Pitch accent and congruence

More on Questions Under Discussion I assume that discourse is modeled following Roberts 1996. Very roughly, this means that the goal of any particular discourse is to solve a number of issues, which are modeled as questions. A bit more precisely, discourses are analyzed as linearly ordered sets of moves, each of which is either a question or an assertion. Moves may be accepted or rejected. If a question move is accepted, it becomes a QUD. The succession of QUDs is itself structured as a push-down stack, called the QUD-stack. It is assumed that at the very beginning of the discourse one over-arching question is raised. It is the first QUD, and the goal of the discourse is to answer that particular question. Instead of answering the immediate QUD *Q* directly, the discourse participants can chose to ask a sub-question *Q'* of *Q*. *Q'* becomes the immediate QUD and is placed on top of the QUD-stack. When the participants answer the immediate QUD, this question is removed from the stack. The participants may then try to answer the latest unanswered QUD already in the QUD-stack, or else they may introduce another one of its sub-questions, which is introduced in the QUD-stack and becomes the immediate QUD. This is only a very rough summary of Roberts 1996, and I refer the reader to the original article for more details.

Pitch accent One might wonder whether *another* is sensitive to focus. The placement of pitch accent is indeed variable across different uses of *another*, as illustrated in the following pair of examples, where pitch accent is represented by writing accented words in capital letters:

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- (35) A: How wide are these two pieces of furniture together?
B: The cabinet is FOUR feet wide, and the shelves are another THREE feet wide.
- (36) Perhaps though the most stylish part of the system is the large control unit which stands about 8 inches HIGH by 3 inches WIDE and another 6 or so inches DEEP.

In (35), pitch accent is on the numeral word, while in (36) it falls on the adjective. In the analysis that I developed, *another* does not associate with focus. I propose that the variations observed in (35) and (36) follow from general principles of the representation of focus by pitch accent (F-marking).

Following Schwarzschild 1999, I assume that a constraint GIVENness requires all expressions that are not F-marked to be given, while a constraint AvoidF requires the speaker to avoid F-marking. Schwarzschild defines GIVEN informally as follows:¹²

- (37) Definition of GIVEN. (Final Informal Version).
An utterance U counts as GIVEN iff it has a salient antecedent A and:
- a. if U is type e, then A and U corefer.
 - b. otherwise: modulo \exists -type shifting, A entails the Existential-F-Closure of U.

F-marking is governed by the two constraints GIVENness and AvoidF

- (38) GIVENness: If a constituent is not F-marked, it must be GIVEN.
- (39) AvoidF: F-mark as little as possible, without violating GIVENness.

Let us now go back to our pair of examples. In (35), *FOUR feet wide* is GIVEN, modulo existential F-closure, because A's question presupposes that something is wide to some extent. However, since it is not given that there is an object whose width (in feet) is four, we predict that the numeral must be F-marked.

In order to account for F-marking in (36), we have to assume that the adjectives *high*, *wide* and *deep* are not given. This is presumably the case because the understood QUD here is *How big is the control unit?*, which does not make a specific reference to any of the three dimensions used in the answer.

Therefore, we can safely assume that the difference in F-marking between (35) and (36) is just a reflection of differences in the information structure of these two discourses. We have no reason to think that these differences should be taken into account in the formulation of the assertive and presuppositional meaning of additive *another*.

¹² For a formal definition, see Schwarzschild (1999).

Congruence I have suggested so far that additive *another* is anaphoric to the immediate QUD. However, this cannot be right. Consider our stock example again:

- (40) A: How wide are the cabinet and the shelves together?
 B: The cabinet is FOUR feet wide. The shelves are another THREE feet wide.

I assume with Roberts (1996) that assertions must be congruent to their QUD. Note then that the second sentence in B's answer is not congruent to A's question. In Roberts's theory, an assertion α is congruent to question q if and only if the set of F-alternatives of α is identical to the set of Q-alternatives of q . The set of F-alternatives of α is obtained by replacing the focused expressions in α by variables and then interpreting the variables with respect to the complete series of assignment functions that vary at most in so far as they assign different values to these variables. The set of Q-alternatives of a question is obtained in the same way, except that we abstract over question words rather than other focused expressions. Given this much, it is obvious that the second part of B's answer *the shelves are another THREE feet wide* is not congruent to A's question.

However, there is a relation between B's two assertions and A's question: B provides a two part answer to A's question. This is marked in B's intonation by contrastive topics:¹³

- (41) A: How wide are the cabinet and the shelves together?
 B: The CABINET_{CT} is FOUR_F feet wide. The SHELVES_{CT} are another THREE_F feet wide.

In order to capture the relation between A's question and B's answer, we need a theory of question/answer congruence that takes into account contrastive topics. I will adopt the analysis of Büring (2003). The notion of strategy is essential to Büring's analysis. Instead of answering a QUD Q directly, the participants in a discourse may choose to ask a series of sub-questions Q_1, \dots, Q_n of Q . The succession of Q and its sub-questions Q_1, \dots, Q_n together with their answers is called a strategy. This is illustrated in (42):

- (42) (Q) How wide are the cabinet and the shelves together?
 (Q_1) How wide is the cabinet? (A_1) The CABINET_{CT} is FOUR_F feet wide.
 (Q_2) How wide are the shelves? (A_2) The SHELVES_{CT} are another THREE_F feet wide.

Each one of the two covert questions Q_1 and Q_2 is the immediate QUD for the assertion that follows. The formulation of the presupposition triggered by *another*

¹³ In what follows I indicate Focus and Contrastive Topic by subscripting F and CT respectively to expression written in capitals.

must capture this fact. One solution is to postulate that *another* is not anaphoric to the immediate QUD¹⁴ but to the first super-question of the immediate QUD, i.e. the QUD in which the strategy marked by the contrastive topics originates. Alternatively, it is possible to require that *another* relate to *some* question in the QUD stack, i.e. to introduce an existential quantifier over questions belonging to the QUD stack in the presupposition of *another*, and to rely on the fact that only the first super-question of the immediate QUD will satisfy this existential statement. This is the solution that I adopt in the next section.

6 Analysis

6.1 Theoretical assumptions

Structured Meanings Following Krifka (2001), I assume that the basic meaning of a question is a structured meaning.¹⁵ Structured meanings are composed of a background and a restriction, cf. (43):

$$(43) \quad \llbracket \text{Who came} \rrbracket^{g,c} = \langle \lambda w. \lambda x. \text{came}'(w)(x), \text{PERSON} \rangle$$

The background of a degree question is a property of degrees; its restriction is the set of real numbers:

$$(44) \quad \llbracket \text{How heavy is Mary?} \rrbracket^{g,c} = \varphi = \langle \lambda w. \lambda d. \text{weight}'(w)(\text{Mary}) \geq d, \mathbb{R} \rangle$$

For ease of presentation, I will refer to the background of a question Q as $B(Q)$, and to its restriction as $R(Q)$. The background of a degree question is a property of degrees; its restriction is the set of real numbers:

$$(45) \quad B(\varphi) = \lambda w. \lambda d. \text{weight}'(w)(\text{Mary}) \geq d$$

$$(46) \quad R(\varphi) = \mathbb{R}$$

Propositions are also split into a background part $B(p)$ and a focus part $F(p)$, following Krifka 1992, see (47). An answer p is congruent to a question Q if and only if the backgrounds of p and Q are identical and the focus of p is an element of the restriction of Q , see (48):

$$(47) \quad \llbracket \text{BILL will come tonight} \rrbracket^{g,c} = \langle \lambda w. \lambda x. \llbracket \text{will come tonight} \rrbracket(w)(x), \text{Bill}' \rangle$$

$$(48) \quad \text{congruent}(p, Q) \equiv B(p) = B(Q) \wedge F(p) \in R(Q)$$

¹⁴ In (50) that would be the question *How wide are the shelves?* and that would result in a presupposition failure.

¹⁵ This is for convenience only. The analysis can be expressed using a theory of questions that does not use structured meanings.

Measure Phrases Adjectives denotes relations between individuals and degrees. The degree argument of a gradable adjective is a real number that stands for the measurement of the subject of the adjective:

$$(49) \quad \llbracket \text{tall} \rrbracket^{g,c} = \lambda w. \lambda d. \lambda x. \text{height}'(w)(x) \geq d$$

Unit names denote functions from degrees to degrees. Following [Sassoon 2010](#), a unit name maps a real number to itself times the number that is assigned to the unit in c , see (50) and (51) where $r_{foot,c}$ is the real number that is associated with the foot unit in c . Measure phrases and gradable adjectives combine by functional application, cf. (52):

$$(50) \quad \llbracket \text{feet} \rrbracket^{g,c} = \lambda d. d \times r_{foot,c}$$

$$(51) \quad \llbracket 5 \text{ feet} \rrbracket^{g,c} = 5 \times r_{foot,c}$$

$$(52) \quad \llbracket \text{tall } w \rrbracket^{g,c}(\llbracket 5 \text{ feet} \rrbracket^{g,c}) = \lambda x. \text{height}'(g(w))(x) \geq 5 \times r_{foot,c}$$

6.2 Another MP

I assume that *another* first combines with a silent pronoun, and is then left-adjoined to the Measure Phrase. The MP is an argument of the gradable adjective. Due to a type mismatch, it raises to adjoin to the vP, by Quantifier Raising [Heim & Kratzer 1998](#):

$$(53) \quad [_{vP} [[\text{another } \text{pro}_2] \text{ three feet }] [1 [_{vP} \text{ the shelves } [_{v'} \text{ are } [_{AdjP} \text{ t}_1 \text{ wide }]]]]]]$$

Another denotes a function from pairs of degrees to generalized quantifiers over degrees. Its only substantial meaning however comes from the presupposition it triggers. Its presupposition states that there is a question in the QUD stack ($QUD(c)$) that is a degree question (its restriction is the set of real numbers) and that can be answered by adding the salient degree argument of *another* to a definite description of degrees obtained from the property of degree P in the scope of *another*:

$$(54) \quad \llbracket \text{another} \rrbracket^{g,c} = \lambda d'. \lambda d. \lambda P_{(s,dt)}. \lambda w : \\ \exists Q \in QUD(c) [R(Q) = \mathbb{R} \wedge B(Q)(w)(d' + \iota d'' [P(w)(d'')])]. P(d)$$

We predict that (53) receives the following interpretation:

- (55) Interpretation of *The shelves are another pro₂ 3 feet wide* with respect to g, c :
- Defined only if there is a question in $QUD(c)$ whose (partial) answer in w is $g(2)$ plus the width of the shelves in w .
 - If defined, true in w iff the shelves are 3 feet wide in w .

Let us now pause to reflect on the presupposition formulated in (55a). The first conjunct states that some Q in $QU D(c)$ is a degree question. This is correct, in so far as the analysis in section 3 is on the right track. The second conjunct states that Q is answered by adding the salient degree argument of *another* to a description of degree obtained from the property of degrees in the scope of *another*. This means that the answer to Q is a real number that is at least as great as the sum of these two degrees. In the following example, this amounts to the presupposition that the cabinet and the shelves together are at least 4 feet plus the width of the shelves. Using a definite description of degrees is necessary since before the utterance of *the shelves are another 3 feet wide*, the fact that the shelves are 3 feet wide is not yet shared information (A ignores it), and therefore the utterance cannot come with a presupposition that the cumulative width of the shelves and the cabinet is seven feet wide.¹⁶

- (56) A: How wide are the cabinet and the shelves together?
 B: The cabinet is 4 feet wide. The shelves are another 3 feet wide.

6.3 Another NumP

The structure that we assume for *another NumP* is similar to the one we described in the previous sub-section. There is however one significant difference. Whereas Measure Phrase arguments of adjectives are arguably not quantificational, the Numeral Phrases that *another* modifies in this case are clearly existential, as illustrated by example (57):

$$(57) \quad \llbracket \text{It}_i \text{ deafened 5 medics} \rrbracket^{g,c} = \exists X [\text{medics}'(X) \wedge |X| = 5 \wedge \text{deafened}'(X)(g(i))].$$

I will assume that number words denote degrees (i.e. numbers), and that their combination with NPs is mediated by a silent parametrized existential quantifier, following Hackl 2001. The structure of (57) (before QR of the object) is represented in (58):

$$(58) \quad [\text{It} [\text{deafened} [[5 \text{ MANY}] \text{ medics}]]]$$

$$(59) \quad \llbracket \text{MANY} \rrbracket^{g,c} = \lambda d. \lambda P. \lambda Q. \exists X [P(X) \wedge Q(X) \wedge |X| = d]$$

Modulo these modifications, the structure and interpretation of *another* with Numeral Phrases is essentially the same as with Measure Phrases, as shown by the following derivation:

¹⁶ Given that the fact that the cabinet is 4 feet wide is common knowledge at this point, the presupposition would contextually entail that the shelves are 3 feet wide, and therefore B's second utterance would be uninformative, which is clearly wrong.

- (60) $\llbracket \text{another} \rrbracket^{g,c} = \lambda d'. \lambda d. \lambda P_{(s,dt)}. \lambda w :$
 $\exists Q \in QUD(c) [R(Q) = \mathbb{R} \wedge B(Q)(w)(d' + \iota d'' [P(w)(d'')])]. P(d)$
- (61) $\llbracket [[\text{another } pro_3] [1 [it_2 \text{ deafened } t_1 \text{ 5 MANY medics }]]] \rrbracket^{g,c}$ is
- Defined only if there is a degree question Q in $QUD(c)$ whose (partial) answer in w is $g(3)$ *plus the number of medics who were deafened in w*
 - If defined, true in w iff $g(2)$ deafened five medics in w .

In the next section, I show how this analysis accounts for the facts described in section 2.

6.4 Consequences

Sensitivity to the QUD This follows straightforwardly from our analysis. Consider first the following dialogue:

- (62) A: How wide are the cabinet and the shelves separately?
 B: The cabinet is four feet wide. The shelves are (# another) three feet wide.

Another is not licensed in (62) because there is no question Q in the QUD stack, such that it is common ground at the time of utterance of *another* that a partial answer to Q is *four feet plus the width of the cabinet*. The only QUDs that have been raised in this discourse are *How wide is the cabinet?* and *How wide are the shelves?*, considering that A's question is interpreted as the conjunction of these two questions. At the time of utterance of *another*, the first question has been answered and is therefore no longer inside the QUD stack. As for the second, it cannot be answered by adding the width of the shelves to some other measure. Now, consider the following dialogue:

- (63) A: How wide is the bed?
 B: I don't know.
 A: How wide are the cabinet and the shelves separately?
 B: The cabinet is four feet wide. The shelves are (# another) three feet wide.

Let us assume that there are two unresolved questions in the QUD stack at the time of utterance of *another*: *How wide is the bed?* and *How wide are the shelves?*. As it happens, it might be the case that the width of the bed actually equals four feet plus the width of the cabinet. However, since this information is not part of the common ground, *How wide is the bed* cannot satisfy the existential statement in the presupposition. Note that if this piece of information was common knowledge, B's last utterance could be used to answer that question, as in the following discourse:

Another additive particle

- (64) Context: Jim measured the bed and told us that it was exactly as wide as the cabinet and the shelves together. However, he didn't tell us how wide the bed was. A wants to know that. B happens to know the width of the cabinet and the shelves.

A: How wide is the bed?

B: Well, the cabinet is four feet wide, and the shelves are another three feet wide.

Non-overlap Consider (21) again, repeated here as (65):

- (65) Context: $\overline{AC} = \overline{BD} = 2in$

$$A \text{ --- } B \text{ --- } C \longrightarrow D$$

A: How long is AD ?

B: Well, AC is 2 inches long, and BD is (# another) 2 inches long.

In this discourse, the only available questions in the QUD-stack at the time of utterance of *another* are *How long is AD ?* and *How long is BD ?* If we know that the segments AC and BD have a common part, it is common ground that the length of AD cannot be the same as the sum of the lengths of AC and BD . And of course, it is common ground that the length of BD cannot be greater than itself. Therefore there is no question in the QUD-stack that satisfies the existential statement in the presupposition triggered by *another*, which predicts the infelicity of (65).

There is no such problem with the following discourse, inspired from our earlier example (22):

- (66) A: How big is the control unit?

B: It is 8 inches high by 3 inches wide and another 6 inches deep.

In that case, it is assumed that the question *How big is the control unit?*, which is still in the QUD-stack at the time of utterance of *another*, can be answered by providing the sum of its three dimensions.¹⁷

Non-additivity Non-additivity of the measure function is explained in the same way as non-overlap. In example (67), the only accessible questions in the QUD stack at the time of utterance of *another* are *What is the temperature of the Cuba Libre?* and *What is the temperature of the Coke?*. Since temperature is not additive, it cannot be common ground at the time of utterance of *another* that the temperature

¹⁷ Aka its linear dimensions, a measure commonly used in the statement of airlines luggage policies.

of the *Cuba Libre* equals the sum of the temperatures of the rum and the Coke. This predicts the unacceptability of (67).

- (67) A: What is the temperature of my Cuba Libre?
 B: #Well, the rum is 50°F and the Coke is another 40°F.

7 Conclusion

I have argued that *another* is ambiguous between an additive operator and adjectival *other* plus existential quantification. Additive *another* imposes a number of conditions on the common ground. These conditions can be accounted for in an intuitive way if we assume that additive *another* is anaphoric to a Question Under Discussion.

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