Information Update in Dutch Information Dialogues

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Abstract

In this paper, a framework is developed for the study of information update in naturally occurring information dialogues, that takes into account the information structure of the individual utterances. It is based on the dialogue theory of Bunt(1994,1995), the topic management work of Rats (1996), and the information packaging theory of Vallduví (1990). The framework is tested on a corpus of 111 telephone conversations recorded at the information service of Schiphol. The results are promising which gives us the hope that it may serve as the point of departure for a study of information packaging in other naturally occurring conversations as well.

Introduction

In this paper, we will describe a theoretical framework for the study of information update in naturally occurring conversations. Our description will use the information packaging ideas for information update of Vallduví (1990). Until now, information packaging was studied for isolated utterances or isolated utterance pairs, often thought up rather than empirically observed. We now want to apply them to spontaneous human conversation, that has the goal to exchange factual information about a specific domain.

Since Vallduví's work is confined to the analysis of isolated sentences alone, we will have to make the theoretical framework suitable for dialogue analysis. To reach this end, we will integrate the information packaging ideas for information update in the dialogue theory developed by Bunt(1994,1995). We will also use the work of Rats(1994,1995a,1995b,1996), who has extended the theory of Bunt with the notions of *topic* and *comment*. This framework will be refined with the information packaging notions *focus* and *tail*. Our set up will be illustrated by dialogue fragments taken from a corpus of 111 telephone conversations recorded at the information service of Schiphol.

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*This paper reports about research done at the Human Communication Research Center, University of Edinburgh, Scotland and the Institute of Language Technology and Artificial Intelligence, Tilburg University. I am greatly indebted to Harry Bunt for his fruitful comments on the paper.

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The resulting theory will not only be suitable for the study of information packaging in dialogue, it will also provide a more structured description of the dialogue partner's "mental state" Vallduví talks about when he wants to explain the speaker's choice for certain information packagings. Our analysis will show that the speaker's choice for certain information packagings will initially be determined by the introduction of the topic of the conversation. Once the topic is set, his choices will presuppose the context built up so far and depend on the way in which he wants to change it.

The outline of the paper is as follows. Section 1 will describe the information packaging ideas, that we want to integrate. Section 2 and 3 will give an overview of the work of Bunt and Rats and the relation between information packaging ideas and the theory of topic management of Rats will be explained. Section 4 will show the incorporation of the notions *focus* and *tail*. The paper will end with some proposals for further research.

1 Information packaging

Information packaging theorists are interested in the way in which people present the information content of their utterances (Chafe (1976), Vallduví(1990,1994a, 1994b,1994c), Vallduví and Engdahl (1994)). The following two utterances, for instance, show different packagings of the same information:

> The KL 627 will arrive at FIVE PAST TWO
> The KL 627 will ARRIVE at five past two

In the first utterance, the speaker has put an accent on "five past two", while in the second utterance the accent is placed on "arrive".

Information packaging does not only concern sentence accent placement, but also word order and the use of special syntactic structures. The following example stems from Rats (1996).

> We don't get passenger lists.
> Passenger lists we don't get.

The two utterances contain essentially the same information. But the information is presented in different ways. The first sentence exhibits unmarked word order, while the second contains a topicalization construction.

According to the information packaging literature, different linguistic choices reflect different assumptions of the speaker about the information state of the listener. A speaker will construct his utterance in such a way that the information he wants to communicate will be most easily integrated in the presumed information state of the listener. If he considers his message as completely new, for instance, he will present it as completely new. But if he thinks the new information can be attached to an information structure already available in the listener's consciousness, he will present it accordingly.

According to Vallduví, different packagings reflect different update instructions. Each instruction indicates what part of the utterance constitutes the information that has to be updated, according to the speaker's assumptions, and eventually where and how that information fits in the listener's information store. An utterance contains references to at most three informational components:

1. a link, a sentence element that refers to the locus of update,
2. a tail, a sentence element that refines the locus of update, and
3. a focus, a sentence element that points to the actual update potential.

Vallduví uses Heim's file metaphor (Heim (1983)) to describe the roles of the three kinds of reference in the information update more exactly. The information store of the listener could be seen as a collection of entity-denoting file cards. On each file there are entries recording relations and attributes of the entity denoted by that file-card. The content of the file cards is updated during communication. The three informational references each play their own role in making this process more efficient. The *link* points to a specific file card, the *focus* is the information that the listener has to update on that file-card, and the *tail* specifies more exactly where the focus fits on the given file card.

Applied to the above examples, the speaker may assume the following update for the utterance *The KL 627 will arrive at FIVE PAST TWO*:

KL 627
arrival time: ?

↓

KL 627
arrival time: five past two

The speaker assumes that the listener doesn't know or doesn't have the right information about the exact arrival time of flight KL 627. In his knowledge store, there is a file card for flight KL 627 and the file card has a slot for the arrival time. The speaker tells him with what information he can fill this slot.

The following figure shows a possible update for the sentence *The KL 627 will ARRIVE at five past two*:

KL 627
departure time: five past two

↓

KL 627
arrival time: five past two

The listener is assumed to have a file card of the flight and to know about a time connected with this flight, but he has connected this time with the wrong attribute. The speaker tells him in which slot this time needs to be filled.

The utterances in these examples each have a link, a tail and a focus. But the link and the tail need not always be expressed. This may happen, for instance, in a context were both the link and the tail are already available. Since each utterance in a meaningful discourse has the intention to be informative (Chafe (1987)), only the focus is obligatory. This means that there are four possible information structures for utterances:

All-focus in which case the speaker instructs the listener to add the information content of the whole utterance to his information state.

Link-focus in which case the speaker instructs the listener to open a specific file-card and to add, revise, etcetera the focus on this specific file-card.

Link-tail-focus in which case the speaker instructs the listener to open a specific file-card and a specific slot and to add, revise, etcetera the focus on this particular place.

Tail-focus in which case the speaker presupposes that the listener has the link available and he only instructs the listener to go to a particular slot where he must add, revise, etcetera the focus.

According to Vallduví, these information structures manifest themselves in the linguistic form of the utterances. The linguistic realization varies from language to language. For English, prosody plays an important role in the structural encoding of information packaging. The structural difference between, for instance, a link-focus sentence as utterance (1) below and a link- focus-tail sentence as utterance (2) below in English is exclusively expressed by prosodic means.

(1) [$_L$ The KL 507][$_F$ will ARRIVE in time]
(2) [$_L$ The KL 507][$_F$ will ARRIVE] in time

By contrast, in Catalan syntax is the important device by which information packaging choices are expressed. It would be interesting to study the information packaging devices for Dutch. Before this can be done, however, we need to integrate the information packaging ideas for information update described in this section into a dialogue theory. For that purpose, we will use Bunt(1994,1995) and the framework developed in Rats (1996) for topic management in information dialogues. At the same time, we can see if the integration of the information packaging ideas will lead to an acceptable theory for information update in dialogue.

2 Information dialogues

The framework of Rats (1996) is based on a study of 111 naturally occurring telephone conversations, recorded at the information service of Schiphol Airport (Amsterdam International Airport). The conversations belong to the genre of *information dialogues*. Characteristic for such dialogues is that there is an information seeker who needs some information about a certain domain, and an information service that has information about that domain. In our case, the domain is the world of flights and things that have to do with flights, such as passengers, luggage etc. An example of such a dialogue is the following:

**2063

1	I:	Inlichting Schiphol	Schiphol Information
2	S:	Ja,	Yes,
3		u spreekt met de Wijl	you are speaking with de Wijl
4		Vlucht KL 550,	Flight KL 550,
5		hoe laat is die gepland?	for what time is it scheduled?
6	I:	Die wordt nu definitief verwacht om vijf voor twaalf	It is now definitely expected at five to twelve
7	S:	Vijf voor twaalf?	Five to twelve ?
8	I:	Ja hoor	Yes indeed
9	S:	Oké,	Okay,
10		bedankt	thank you
11	I:	Tot uw dienst	You're welcome
12	S:	Dag	Goodbye
13	I:	Dag	Goodbye

In this dialogue information is exchanged about flight KL 550.

The dialogues were analysed according to the Dynamic Interpretation Theory (DIT) of Bunt(1994,1995). The basic units of analysis are taken to be *utterances*, sentences or other grammatical units (words or phrases) that express one or more *dialogue acts*. Dialogue acts are defined as functional units used by the speaker to modify the dynamic context. They bring the dialogue context, which contains the information states of the two participants, from one state to an other. A dialogue act has an information content and a communicative function. The communicative function will determine how the information content of the act will be integrated into the context.

Looking at the example dialogue, it may be observed that not all utterances concern exchange of information about a topic in the task domain. We see utterances that concern various aspects of the communication at a meta-level, like introducing oneself, showing contact, greeting, and showing acceptance, gratefulness and willingness to cooperate. These aspects, which are very important for a successful and smooth information exchange, seem rather marginal with respect to topic management. Bunt (1994) has called these acts *dialogue control acts*.

For the description of topic management, we restrict ourselves to only those dialogue acts that really concern information exchange about domain topics. These are

- topic management acts
  - explicit topic introductions
  - explicit topic shifts
- informative acts
  - wh-questions and wh-answers

- yes/no-questions and yes/no-answers
- checks, confirms, and disconfirms
- alternative-questions and alternative-answers
- informs
- corrections

In the example dialogue, only utterances 4, 5, 6, 7 and 8, concern information exchange about a certain topic of the task domain.

**2063

1	I:	Inlichting Schiphol	Schiphol Information	
2	S:	Ja,	Yes,	
3		u spreekt met de Wijl	you are speaking with de Wijl	
4		Vlucht KL 550,	Flight KL 550,	Explicit topic introduction
5		hoe laat is die gepland?	for what time is it scheduled?	Wh-question
6	I:	Die wordt nu definitief verwacht om vijf voor twaalf	It is now definitely expected at five to twelve	Wh-answer
7	S:	Vijf voor twaalf?	Five to twelve ?	Check
8	I:	Ja hoor	Yes indeed	Confirm
9	S:	Oké,	Okay,	
10		bedankt	thank you	
11	I:	Tot uw dienst	You're welcome	
12	S:	Dag	Goodbye	
13	I:	Dag	Goodbye	

3 Topic management

In Rats (1996), topic management is described in an incremental way. First, the topic-comment structures of individual utterances are determined. Then, it is shown how the topic-comment structures of the individual utterances are combined to form a topic-comment structure of a dialogue fragment.

The description starts with the following definitions of topic and comment for dialogue acts (cf. Gundel(1985,1988)):

> *An entity, T, is the topic of a dialogue act, D, if D is intended to increase the addressee's knowledge about, request information about or otherwise get the addressee to act with respect to T.*
>
> *Information, C, is the comment of a dialogue act, D, if D is what is actually communicated, i.e., asserted, questioned with respect to the topic.*

We will show how these definitions work by applying them to each of the utterances of the following dialogue fragment:

**2063

		...
4		Flight KL 550,
5		for what time is it scheduled?
6	I:	It is now definitely expected at 11.55.
7	S:	11.55?
8	I:	Yes.
		...

In utterance 4, a topic is introduced: Flight KL 550. In utterance 5 information is requested about it:

> *for what time is it scheduled?*

The topic of this utterance, the entity about which the information is asked, is represented by *it*. The rest of the utterance *for what time is _ scheduled?* represents the information that is asked about it, the comment.

Utterance 6 provides the requested information:

> *It is now definitely expected at five to twelve.*

The topic of this utterance, the entity about which the information is provided is again represented by *it*. The comment, the information provided about it, is represented by the rest of the utterance *_ is now definitely expected at five to twelve.*

Utterance 7 checks this information by repeating part of utterance 6:

> *Five to twelve?*

The topic and also a large part of the comment is left out. Only part of the comment of the preceding utterance is expressed. Nevertheless, the topic this piece of information is about is still the same: Flight KL 550.

After consequent application of these definitions to the individual informative acts in the corpus, the acts could be connected with the topics functioning as links, as is illustrated by example dialogue **4379.

The analysis shows that the information exchange in the conversation is organized around one topic, topic T_1, the JU 222. Stated in another way: the topic is the connecting thread between the individual utterances in the dialogue. In fact, all dialogues in the corpus exhibit one or more of these topical lines.

We may derive from this that the function of topic management is to provide the speakers with a point of attachment for information exchange. It ensures that information is exchanged in an orderly and understandable way where the information content of each informative dialogue act is connected with an entity introduced in the preceding context and, if there is no preceding context or if a new connected dialogue fragment has to be opened, it introduces a new point for connection.

In terms of the information packaging theory, topic management serves the linkage part of information packaging. And in terms of the file card metaphor, a topic introduction act instructs the listener to evoke a specific file-card in his knowledge store, or to construct one in case the listener has no previous knowledge about it. A topic shift act instructs the listener to open another file card. A topic continuation makes the listener continue the information update on the same file card. By pointing the loci of update, topic management acts structure the information update.

In each case, topic management aims at restricting the discussion on a certain entity, its directly associated entities, and the information that is requested, asserted, etc. about it in the conversation (Grosz (1981), Sidner (1983)). As a result, the topic serves as a "context" or a "framework" for information update

**4379

1	I:	Informatie Schiphol	Schiphol Information						
2	S:	Ja, goedemo...middag	Yes, good mo...afternoon						
		mevrouw	madam						
3		Kunt u mij misschien	Can you tell me						
		ook zeggen							
4		is het toestel uit	Has the plane from		T_1				
		Dubrovnik,	Dubrovnik,		$\downarrow$				
5		de JU 222,	the JU 222,		T_1				
					$\downarrow$				
6		die om twaalf uur	that was supposed		T_1	-	C_1		
		twintig op Schiphol	to arrive at Schiphol		$\downarrow$				
		zou komen,	at twenty past twelve,		$\downarrow$				
7		is die al geland?	has that yet landed?		T_1	-	C_2		
8	I:	Even kijken,	Let's see,		$\vdots$				
9		een ogenblikje	just a moment		$\vdots$				
10	S:	Alstublieft	Thank you		$\vdots$				
11	I:	Hallo	Hello		$\vdots$				
12	S:	Ja, mevrouw	Yes, madam		$\vdots$				
13	I:	Nou, ik heb wel	Well, I have had	T_2 -	$C_3(\geq T_1)$				
		de JU 222 gehad,	the JU 222,		$\downarrow$				
14	S:	Ja,	Yes,		$\downarrow$				
15	I:	maar die komt niet	but it doesn't come		T_1	-	C_4		
		vanuit Dubrovnik	from Dubrovnik		$\downarrow$				
16	S:	O,	Oh,		$\downarrow$				
17		waar kwam die dan..	where did it then..		T_1	-	C_5		
					$\downarrow$				
18		uit Zagreb?	from Zagreb?		T_1	-	C_6		
19	I:	Ja	Yes		$\downarrow$		$\downarrow$		
20	S:	Ja, das ook goed	Yes, that's all right too	$T_3(=[$	T_1	-	$C_6])$	-	C_7
					$\downarrow$				
21	I:	Ja, die is geland hoor	Yes, it has landed		T_1	-	C_8		
					$\downarrow$				
22		kwart voor een	a quarter to one		T_1	-	C_9		
					$\downarrow$				
23	S:	Kwart voor een	A quarter to one		T_1	-	C_9		
24		Fijn,	Fine,						
25		dank u wel	thank you very much						
26	I:	Tot uw dienst hoor	You are welcome						
27	S:	Dag mevrouw	Goodbye madam						
28	I:	Dag mevrouw	Goodbye madam						

Flight KL 550
Scheduled arrival time: ?   ⋮

↓

Flight KL 550
Scheduled arrival time: ..   Definitive arrival time: 11.55   ⋮

Figure 1: The information update in dialogue **2063

and as such enables the speakers to use informationally incomplete expressions in an unambiguous way.

We will illustrate this with the help of dialogue fragment **2063 and figure 1. Figure 1 describes the information update after each turn in the dialogue.

**2063

		...	
4		Vlucht KL 550,	Flight KL 550,
5		hoe laat is die gepland?	for what time is it scheduled?
6	I:	Die wordt nu definitief verwacht om vijf voor twaalf	It is now definitely expected at five to twelve
7	S:	Vijf voor twaalf?	Five to twelve ?
8	I:	Ja hoor	Yes indeed
		...	

With utterance 4, the speaker introduces the topic of this short information exchange. In terms of the file metaphor, the speaker instructs the listener to open his file card of Flight KL 550. By doing this, he shows that he wants to restrict the exchange to this entity. In utterance 5, he asks the information that he wants to know about it, the scheduled arrival time. Since the framework of interpretation is already set, he refers to the topic with an anaphor, *it*.

The first box of figure 1 shows the update after the first turn. A file card of Flight KL 550 is opened and a slot on that card is highlighted. The speaker has made clear that he doesn't know the value of the slot.

With utterance 6, the information service gives the requested information. She even gives more information than asked for. Being very cooperative, she gives the information she considers more interesting for the information seeker (the definitive arrival time instead of the scheduled time). A pronoun is used to refer to the topic, since the framework of interpretation is clear. The second box of figure 1 shows the information update intended by this turn.

With utterances 7 and 8, the update is verified and grounded. The speakers abbreviate their utterances still more. In utterance 7, only the just updated in-

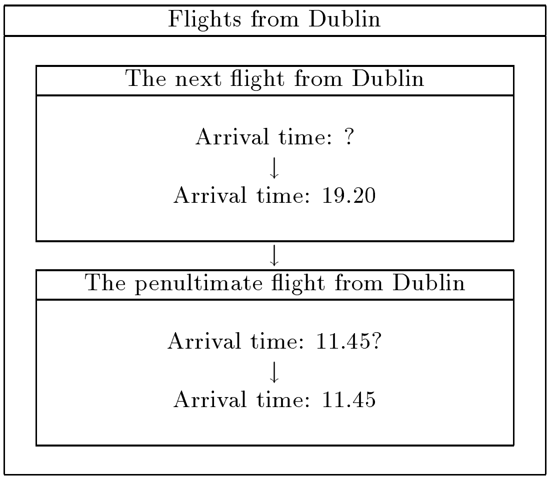

Figure 2: Topic change in dialogue **1144

formation element is expressed, which refers exactly to the information element that is checked. In utterance 8, only the most informative part of the answer is expressed *ja hoor (yes indeed)*. In both cases, the framework of interpretation, the topic, is presupposed.

Dialogue **1144 and figure 2 show an example of an information exchange in which a topic shift occurs.

**1144

		...	
5	S:	Zou je mij kunnen zeggen	Could you tell me
6		het eerstvolgende vliegtuig uit Dublin	the next plane from Dublin
7		wanneer dat aankomt?	when will it arrive?
8	I:	Dat is vanavond pas om twintig over zeven	That is this evening only at twenty past seven
9	S:	Negentien uur twintig	Nineteen hours twenty
10	I:	Ja	Yes
11	S:	Ja,	Yes
12		want eh.. het voorlaatste was zeker die een	because eh... I suppose the penultimate was that one
13		die om kwart voor twaalf aankwam	which arrived at a quarter to twelve
14	I:	Juist, ja ja	Right, yes yes
		...	

Utterance 6 of this dialogue introduces the first topic, *The first plane from Dublin.* It instructs the dialogue partner to open a file card of the first flight from Dublin. The description of the topic shows that it needs to be found within a bigger file-card named "Flights from Dublin".

With utterance 7, the arrival time of this flight is requested. It moves the attention of the listener to the arrival time slot on this specific file-card. Utterance 8 gives the value of the arrival time. It instructs the listener to update the arrival time slot with this value. Utterances 9 and 10 ground this instruction and make it mutually agreed[1]. The first embedded box of figure 2 represents this information update.

After this information exchange is closed, a new one is opened with the introduction of a new, although related topic, *the penultimate one*. This topic need also to be found within the scope of the more global topic "Flights from Dublin". Utterance 13 checks the arrival time of this topic, moving the attention of the dialogue partner to this particular slot on the file card. Utterance 14 confirms the check. The second embedded box of figure 2 represents the update process in this information exchange.

Both examples clearly show the function of topic management in an information dialogue. Topic management acts determine the locus of update. They restrict the attention of the speakers to this particular locus and as such enable the speakers to apply pronouns and ellipsis without ambiguity.

4 Integrating tail and focus

In Rats (1996), the analysis was restricted to topic management, and the information exchanged about topics was globally analysed as comment. With Vallduví's information packaging theory, the comment part can be refined and its function within the information exchange can be made more precise. Following Vallduví, the notions of focus and a tail may be defined as follows.

> *An information unit, F, is the focus of a dialogue act, D, iff F is the information that actually has to be updated with respect to the topic.*
>
> *An information unit, L, is the tail of a dialogue act, D, iff L refers to a characteristic of a topic the value of which need to be added, revised, checked etcetera.*

Of course, not all comments will contain of a tail. But all of them will contain a focus.

Which specific update a focus causes within the information update, must be derived from the communicative function that the utterance expresses. The focus of a wh-question is the information that is asked about the topic, as figures 1 and 2 illustrate (compare Hoepelman, Machate, and Schnitzer (1991)). In file card metaphor terms: the focus refers to a slot, the speaker doesn't know the value of. In principle, the focus of a wh-answer will be the item that gives the value of the slot[2](Hoepelman, Machate, and Schnitzer (1991)).

A wh-answer is a more specific variant of an inform, a dialogue act that intends to give information that is considered to be new for the listener. The focus of

[1]See Traum and Allen (1992) for a more extended explanation of grounding in dialogue.

[2]Of course, other reactions to a wh-question are possible. It could happen, for instance, that the other speaker doesn't know the value, so that a meta-dialogue will follow in which he explains that he doesn't know the answer. However, these kinds of reactions will not be defined as wh-answers.

an inform is the specific information that the speaker considers to be new for the listener. It depends on the scope of the focus what update should take place. In case of wide focus, a slot needs to be created before it can be filled. In case of a narrow focus, a file-card and eventually a slot are considered to be available and the listener is instructed to update the slot with the value given by the focus of the inform.

As is argued by Hoepelman, Machate, and Schnitzer (1991), the focus of a yes/no-question or a check will be the item that the speaker asks the listener to verify for the topic. Hoepelman et al. give the following example dialogues to make their point[3].

(1) A: Is Dali a COMPOSER?
B: No,
he is a PAINTER

(2) A: Is DALI a composer?
B: No,
BEETHOVEN is a composer

In the first utterance of the first dialogue, the focus is *"COMPOSER"*. The dialogue partner is requested to verify if the characteristic *composer* holds for *Dali*. An important argument for this analysis is that if the question contains information that needs to be corrected, an utterance like *"he is a PAINTER"*, with *PAINTER* as the focus, expresses the felicitous correction. With this linguistic form, an alternative characteristic is given for Dali. The focus of the first utterance of the second dialogue is *DALI*. The dialogue partner is requested to verify if Dali belongs to the set of composers. The felicitous correction for this utterance is an utterance that gives an alternative member of this set. In both examples, the topic is kept the same during the update, while the foci form the dynamic part of the information exchange.

The focus of an alternatives-question is the list of alternatives that need to be checked for the topic, the focus of an alternatives-answer is one of the alternatives, and the focus of a correction is the item that needs to be corrected with respect to the topic. This is illustrated by example dialogue **5479 and figure 3.

**5479

6	S:	voor een eh intercontinentale vlucht	for an uh intercontinental flight	topic introduction
7		moet ik daar een uur of twee uur van te voren aanwezig zijn?	do I have to be present one or two hours in advance?	alternatives question
8	I:	Twee uur van te voren	Two hours in advance	alternatives answer
9	S:	Een uur van te voren?	One hour in advance?	check
10	I:	Nee,	No,	disconfirm
11		twee uur	two hours	correction

[3]The sentence elements in capital letters must be read as accented.

intercontinental flight	
time to be present:	two hours in advance one hour in advance

↓

intercontinental flight	
time to be present:	two hours in advance

↓

intercontinental flight	
time to be present:	one hour in advance?

↓

intercontinental flight	
time to be present:	

↓

intercontinental flight	
time to be present:	two hours in advance

Figure 3: Information update in dialogue **5479

Utterance 6 of this dialogue introduces the topic of the information exchange, *"an intercontinental flight"*. Utterance 7 asks an alternatives question about it: if the speaker has to be present one or two hours in advance. The focus of this question, the items that need to be checked for the intercontinental flight, is *one hour in advance* and *two hours in advance*. The first box of figure 3 shows the update after this first turn. We see that the focus is represented as the possible values of a slot.

Utterance 8 gives the answer to the question. It only expresses the focus, since the context is given by the preceding turn. The second box of figure 3 shows the update aimed by the second turn. The value of the slot is changed in one of the alternatives.

Utterance 9 is a check. It shows how the speaker has understood the previous utterance. It only expresses the focus, since the framework of interpretation is still given. Box 3 in figure 3 shows which update is checked by utterance 9[4]. The

[4]In fact, this particular step in the dialogue shows that a model for information exchange in dialogue should be slightly more complicated. We need to distinguish a representation of the information update of each of the speakers from the representation of the information update that is mutually agreed and understood (see for instance (Hoepelman, Machate, and Schnitzer

other speaker doesn't agree with the value that is presented in the check, so with utterance 10 he performs a disconfirm. Box 4 gives the update aimed by utterance 10. The wrong value is taken from the representation. Utterance 11 gives the correct value. Again, only the focus is expressed to fill the empty slot. Box 5 of figure 3 shows the aimed update after this utterance.

The examples show how the notion of comment can be refined by means of a focus and a tail. The topic and the tail form the framework for the information update, while the focus is the information element that is changing with each step in the information exchange.

5 Further research and conclusion

Now the theoretical framework is set, a study can be made to the linguistic realisation of topic, tail, and focus in naturally occurring conversations. The study will not only give us a better insight in the information packaging devices of the Dutch language, it will also enable us to find more empirical evidence for our framework. The first promising steps in this direction have been made.

In Rats (1996), an extensive study is reported of the syntactic realization of topic management in a corpus of 111 Dutch telephone conversations. It turns out that speakers apply special syntactic structures to mark changes in the topical structure of their conversation and follow standard word order in case of topic continuation. Rats and Bunt (1997) describes a study of the syntactic realization of focus in the same corpus. Also in this case, Dutch speakers apply special syntactic structures to mark the focus of their utterance, although the means are not as rich as for topic management.

The description of the syntactic realization of focus shows that more research is required into its prosodic realization. We saw for instance that to be able to know exactly which item is checked in case of a yes/no question, we need information about the placement of the sentence accent. Also for a complete description of the linguistic realization of topic management, we may need prosodic information. Research done to the relation between accentuation of referential expressions and topic management in spoken monologues (Terken (1984), Nakatani (1995)) in English and Dutch has shown that speakers indicate topic introductions and topic shifts by accentuation. So, it is plausible that new insights may be gained in this field too.

From these results, we may conclude that the study of information packaging in naturally occurring dialogues is worth to be studied. It enables us to extend and refine our insights about information update in dialogue, and it gives us a framework of interpretation for speakers' use of special syntactic constructions, abbreviate expressions and certain intonation contours.

(1991))). This complication is, for practical reasons, kept out of the scope of this paper.

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