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Verbs of speaking and verbs of thinking

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Abstract. In this paper, I address the differences between verbs of speaking (VOS) and verbs of thinking (VOT) with respect to complementation. I argue that even if in a language these two types of verbs share the same construction, that does not allow us to say that they fall into the same class. A cross between Functional Grammar and Generative Grammar provides us with a refined syntactic structure, where, crucially, functional hierarchy is relative rather than absolute. This allows us to deal with different word orders. The proposal is that the verbs in question always undergo a kind of “functionalization”, a process that is related to Cinque’s 2004 view of restructuring and makes them acquire certain features of function operators like adverbials. Syntactically, VOS and VOT turn out to occupy separate functional slots. Going back to our starting point, that accounts for observed differences in complement type such as finite- and non-finiteness, absolute or relative temporality etc.

1. Introduction

1.1. Issue

This paper is mainly concerned with the syntax and the semantics of declarative predicates or verbs of speaking like *say*, *tell* and so on, and with their relation with verbs of thinking (*think*, *believe*...). At first sight, there are few differences between (1) and (2). *Say* and *think* take the same complement *that*, and there is no factivity effect, that is the speaker need not believe the content of the *that*-clause.

- (1) *Mary says that Paul is her friend.*
(2) *Mary thinks that Paul is her friend.*

But this is not so clear-cut in every language. Look for example at Classical Greek data provided in (3), (4) and (5).

- (3) *Leg-ôn hoti Phormiôn ouden-Ø*
say-PTCP.PRS.NOM.M.SG COMP Phormion-NOM nothing-ACC.N
poi-ei t-ôn dikai-ôn.
do-IND.PRS.3SG the-GEN.N.PL fair-GEN.N.PL¹

‘Saying that Phormion does not do anything fair.’

- (4) ... *leg-ont-a mêdena heteron einai to-n*
say-PTCP.PRS.ACC.M.SG nobody-ACC.M else-ACC.M be-INF.PRS the-ACC
*Nikodêm-ou fone-a, all’ Aristarcho-n.*²
Nikodêmos-GEN murderer-ACC.M.SG but Aristarchos-ACC

‘Saying that nobody else is Nikodemos’ murderer but Aristarchos.’

- (5) *Nomiz-ô fauloter-ous einai t-ou deont-os.*³
believe-IND.PRS.1SG (them) baser-ACC.PL be-INF.PRS the.GEN necessary-GEN.

‘I think that they are too base.’

Legô ‘say’ takes as complement either a *hoti* (that) clause, which is excluded after verbs of thinking, or an Accusativus cum Infinitivo (AcI), which is the construction expected with

verbs like *believe* or *think*. On the contrary, in French, as in English and many other modern European languages, both classes of predicates select for a *quel/that* clause.

Therefore several questions arise :

What is the difference in Greek between verbs of thinking and verbs of speaking, if any ? Do the two constructions reflect a semantic difference in the nature of the complements ? What does this difference tell us about these two classes of verbs ?

1.2. Preliminary remarks

At first glance, (1) expresses Mary's utterance of her thought (2). However, she can also express something that is not her real thought, but a pretence. Pragmatically, she commits herself to the truth of her utterance, but given that it is an implicature, it can be easily deleted, especially in reported speech as (6). It has been a long-standing question whether believing is part of speaking or not (see for example Lyons [1977], who thought that they were inseparable). If the answer is no, it is possible that the present discussion is irrelevant.

(6) *Mary says that Paul is her friend, but she doesn't actually think so.*

Assuming however that they are in some way related, where is the starting point for our investigation ? Turning back to our first statement, the difference resides in whether the thought is uttered or not, that is in a speech act feature that is found with *say*.

From this point on, two tracks present themselves. Either we treat verbs of speaking and verbs of thinking as two classes with sets of properties that are irreducible to one another, or we can analyse verbs of speaking as complex predicates [think + utter feature]. Despite the above-mentioned debate, it seems that the two classes have much in common, and that the first approach would give rise to more issues than it can resolve. We will then follow the second track. This first theoretical step does not tell us how to deal with this 'utter'-feature.

Accounting for this feature in terms of syntactic selection is not possible since *say* and *think* in Greek share a construction. Nor is it possible to call for semantic selection until a long examination given the complications we have seen above. Therefore, what I propose is to begin with the assumption that speaking is just thinking and express one's own thought. Our first task will then be to pinpoint where this feature is conveyed. Fortunately, we are not working in an unexplored area. The idea that something is added to a thinking process appeals to a hierarchical organization. Here are the hypotheses that can be drawn from this basic proposal.

1.3. Hypotheses

i) The syntactic structure of the complement of verbs of thinking lacks a layer. This layer would be the site where the 'utter'-feature is checked. This has mainly been developed in frameworks such as cartographic approach. The possibility of using a complementizer with speech act predicates (henceforth SAPs) in Classical Greek would be related to a higher level in the left-periphery of the clause, namely the (illocutionary) force-level. This has been argued for other verb classes in McCloskey (2006) or Haegeman (2006), to cite but a few. This would lead us to a structure like (7) and (8), for a verb of speaking, and like (9), for a verb of thinking where the missing structure has been struck through. The size of the missing structure remains of course to be clarified along with what the whole structure has to look like, which is not as straightforward as it seems when we see the most current structure

proposed for the left-periphery of the clause. For example, the two just mentioned accounts are rather different in this respect.

- (7) *Independent clause* : [*Force Top Foc Top Fin IP ...*]
- (8) *Say* [*Force Top Foc Top Fin IP ...*]
- (9) *Think* [~~*Force Top Foc Top Fin IP ...*~~]

ii) The selection differences are the manifestation of semantic differences. In Functional Grammar (henceforth FG), for instance, the clause is divided into several functional layers that correspond to several operators. The syntactic mapping of these layers is not clear in this framework, but the semantic component is highly supported by the scope of adverbials. SAPs select for a complement corresponding to an entity of a higher type than verbs of thinking. This complement is therefore realized differently as can be seen from (10) through (12).

- (10) *Independent clause* : [*E(X(e ...))*]⁴
- (11) *Say* [*E(X(e ...))*]
- (12) *Think* [*X(e ...)*]

These two approaches are not incompatible of course, though not necessary to one another. But before going further, let us see why both proposals are problematic.

1.4. A further issue

Neither theory is concerned with the fact that postulating a speech act feature in the syntactic structure or in the meaning of the *complement* is somehow redundant with the meaning carried by the embedding verb of speaking. This verb specifies the type of the illocutionary force. So, this information does not have to take place in the complement, or, at least, this must be justified by, say, a split in this feature, or the presence of two subfeatures, it is not yet clear.

Such an observation requires us to formulate other hypotheses. Indeed, if the illocutionary force is carried by the matrix verb, it should not be represented in the embedded clause. Therefore, the embedded clause should lack a layer or a feature compared to an independent clause. We end up with a structure like (13), (14) and (15), to be made precise as in the preceding hypotheses.

- (13) *Independent clause*: [*Force Top Foc //⁵ Top Fin IP*] or [*E //⁵ (X(e ...))*]
- (14) *Cartography*: *Say* [*low CP level, IP*]
- (15) *FG*: *Say* [*(X(e ...))*]

If it is right, that principle carries over to the structure of verb of thinking complements and provides us with something like (16) or (17), for reasons to be made precise later, but which can be roughly formulated as a lack of the epistemic layer.

- (16) *Cartography*: *Think* [~~*Force Top Foc Top Fin IP ...*~~]⁶
- (17) *FG*: *Think* [*(e ...)*]

1.5. Modified hypotheses

Now we need to rephrase our hypotheses along the lines of the previous observation.

i) The syntactic structure of the complement of verbs of thinking lacks a layer compared to that of verbs of speaking which corresponds to an independent clause. This layer would be the site where the ‘utter’-feature is checked.

ii) An independent clause is the only syntactically complete clause. A verb of speaking conveys an ‘utter’-feature, hence its complement lacks the corresponding layer. This reasoning carries over to verbs of thinking, but with two missing layers : the ‘utter’-feature site and the epistemic site.

iii) The selection differences are the manifestation of semantic differences. Verbs of thinking lack a semantic speech feature, which is reflected by a difference in construction selection. Their complement is not a speech act, but a proposition.⁷

iv) The selection differences are the manifestation of semantic differences. Verbs of speaking bear the feature ‘illocutionary-force’-declarative. Therefore their complement is a proposition. Verbs of thinking bear an epistemic feature, therefore their complement is a State of Affairs.⁷

We end up with four hypotheses.

1.6. *Claim and organization of the paper*

The paper is organized as follows : I begin with an examination of the first two hypotheses. I shall look in detail at the left-periphery of the clause and the cartographic approaches, and conclude that it is still too messy to obtain an accurate structure. I turn then to some Spanish data in order to highlight a relevant difference between declarative, on the one hand, and interrogative and order SAPs, on the other hand. At this point, Spanish data do not shed much light on the subject.

I address then the last two hypotheses and the functional part of the study and explore what the adverbs can tell us about the internal layering of the embedded clause. It turns out that the hypothesis iv) is borne out.

Finally, I point to the theoretical contribution of the study, and try to fix the puzzle of Greek data. Throughout the study I keep in mind the following questions:

If there is a difference between speaking and thinking predicates, why does *legô* ‘say’ accept two constructions ?

Does this difference also exist in languages that have one and only type of complementation ?

2. A truncated split-CP structure ? (McCloskey 2006), (Haegeman 2006)

An incomplete or truncated structure has already been claimed for, for example in McCloskey (2006) or Haegeman (2006). Let us see if their proposals apply to our issue.

He points out that after certain verbs a topicalized element can appear above the complementizer *that*, whereas this is impossible with others, at least in Irish English and in Italian. The contrasts are between (18)–(19) and (20) on the one hand, and (21) and (22) on the other hand, where the fronted elements are in bold.

(18) ? *He asked me **when I got home** if I would cook dinner.* (McCloskey 2006: 98)

(19) ? *He asked me **when I got home** would I cook dinner.* (McCloskey 2006: 98)

(20) * *He remembered **when I got home** if I would cook dinner.*

(21) *Mi domando **Mario** chi l’ ha visto.* (McCloskey 2006: 108)
wonder-PRS.1SG Mario_i who him_i see-PRF.3SG

‘I wonder who saw Mario.’

(22) **Ricordo Mario chi l’ ha visto.* (McCloskey 2006: 108)
remember-PRS.1SG Mario_i who him_i see-PRF.3SG

‘I remember who saw Mario.’

The basic idea is that sentences like (20) and (22) lack the uppermost level of the left periphery. A kind of truncation has taken place. Therefore the TopP above FocP is no longer an available landing site for any fronted element, which leads to the ungrammaticality of (20) and (22).

This correlates with the CP recursion, where the topicalized element occurs between the two complementizers. In (23) the underlined verb inversion is argued to be a way to mark another C place in Irish English, given the equivalence between (18) and (19), where, with the same verb *ask*, *if* as well as the inversion, occurs under the fronted adverbial clause.

(23) *Patsy asked him if, when he was sent to college, was it for a clergyman or a solicitor.*
(McCloskey 2006: 104)

In this paper, McCloskey is mainly concerned with questions. For him (McCloskey 2006: 110–112), the presence of *if* in the highest position of the structure is the syntactic counterpart of the semantic operator QUEST, proposed by Krifka (2001). The boundary would then be between interrogative and resolute verbs, which lack the QUEST operator.

We are therefore dealing here with a parallel similar to ours. In McCloskey’s paper, it is between questioning and answering predicates ; in ours, it is between declarative predicates and verbs of thinking. In fact, the following contrast holds :

(24) *Patsy tells him that₁, when she was in college, that₂ she could not stand anybody.*

(25) **Patsy thinks that₁, when Peter was in college, that₂ Peter could not stand anybody.*

(26) *Patsy thinks that₂ Peter could not stand anybody when Peter was in college.*

The interpretation would then be that the structure layers above *that* in (26) are missing and that these missing layers contain a slot for the illocutionary force marker.⁸ It is the same for McCloskey’s data, where the uppermost level is missing with verbs introducing an answer, namely a fact.⁹

But the parallel is not as robust as it appears at first glance, given that the propositional content of verbs of thinking does not entertain the same relation with SAPs as resolute verbs with respect to questioning ones. The question and the answer are complementary, while the relation between the two types of *that*-clauses is far from being straightforward. It resembles more a kind of inclusion relation.

Furthermore there is a worse objection to McCloskey’s hypothesis, provided by his own data. He shows that the negative, interrogative and nonveridical environments improve greatly the acceptability of the sentences with a resolute verb. Look at (27) through (32) from McCloskey (2006: 99–100) :

(27) **I remember who did they hire.*

(28) ?*Do you remember who did they hire?*

(29) ?*I don’t remember who did they hire.*

(30) **You remember when they were in Dery if they lived in Rosemont?*

(31) ?*Do you remember when they were in Dery if they lived in Rosemont?*

(32) *Do you remember when they were in Dery did they live in Rosemont?*

As argued in the last part of his paper, the factors for CP truncation or completeness are more semantic or even pragmatic than merely syntactic and related to the selectional properties of certain verbs. The division is not between two classes of verbs, but between two environments, and therefore cannot apply to our issue.

Haegeman's (2006) proposal is close to McCloskey's. Going into it would take us too far. In few words, she proposes that there may be gaps in the structure, depending on the embedding verb. The reason why we do not keep this theory is that if we are dealing with gaps, we lose the descriptive advantage of a layered structure that can be truncated, or at least, all the tests must be rephrased, given that they are, as far as I understand them, based on the *ordering* of the constituents.

Further research is then needed in this domain, and possibly a parametrization.

3. Declarative and other SAPs: what Spanish data tell us

The cartographic approach, though appealing, cannot help us in determining the declarative complement nature, propositional or illocutional. We can then change our viewpoint and turn towards the predicates that we can assume belong to the same class and are comparable: interrogative, order and declarative SAPs. Look at the following Spanish data:

(33) *Te pregunt-an (que) para qué quie-res el préstamo.*¹⁰
 you ask-IND.PRS.3PL COMP for what want-IND.PRS.2SG the loan

'They ask you what you want the loan for.'

(34) *Investigar-on (*que) para qué quier-es el préstamo.*
 investigate-IND.PRS.3PL (*COMP) for what want-IND.PRS.2SG the loan

'They investigate you what you want the loan for.'

(35) *El detective sab-e (*que) quiénla mat-ó.*
 The detective know-IND.PRS.3SG (*COMP) who her kill.IND.PST.3SG

'The detective knows who killed her.'

(36) *El detective no sab-e (*que) quiénla mat-ó.*
 The detective NEG know-IND.PRS.3SG s (*COMP) who her kill.IND.PST.3SG

'The detective does not know who killed her.'

(33) is possible with or without *que*, whereas (34) and 0 are impossible with *que*. The *que* preceding the interrogative is limited to questioning verbs that are SAPs. It is even excluded after a non SAP inquiry verb (34). (36) shows that the negation does not help. The split is then not the same as in McCloskey (2006).

Now, if you look at (37), it turns out that *que* can also optionally occur with a verb of order, which is also a SAPs. As argued in Lahiri (2002), *que* is then a 'quotation marker'. But we are not dealing with a *direct* quotation marker. It is rather a 'reporting marker', given that the sequence of tense is possible.

(37) *Orden-ó/dij-o (que) a no molest-ar-le.*
 Order/say-IND.PST.3SG COMP to NEG bother-INF him.

'He ordered/said not to bother him.'

Que is therefore expected after declarative SAPs. But it never occurs. See (38).

(38) *Dij-e* (**que*) *que se fuer-a* *Juan.*¹¹
 say-IND.PST.1SG (*comp) COMP leave-SBJV.PRET.PRF.3SG Juan
 ‘I said that Juan should leave.’

This fact is striking. The parallel between order and questioning predicates induces that what they embed is not a reduced structure, but an entire speech act. Why cannot it appear with declarative SAPs? According to Demonte and Fernández-Soriano (2009), this is due to phonetical constraints, since sentences like (39) are possible, with complementizer recursion. In (38), a kind of haplology takes place, which is precluded in (39) by the intervening topic. Declarative SAPs pattern with the other SAPs and embed a full structure, namely the whole speech act, and not a proposition.

(39) *Dic-e* *mamá [que a tu hermana(que)*
 Say-IND.PRS.3SG mom COMP to your sister COMP
*no la dej-es salir].*¹²
 not her let-SBJV.PRS.2SG go_out-INF
 ‘Mom says that you should not let your sister go out.’

But (40), where *que* and *qué* have the same pronunciation, should be excluded, as well. Yet it is not the case.

(40) *Me dij-o* *(*que*) *quéhab-ia pasado.*
 To me say-IND.PST.3SG *(comp) what happen-IND.PLUPERFECT
 ‘He asked me what happened.’

Moreover, if the first *que* were a quotation marker, it is not clear to me why it is the second *que* that is optional. It is the first one that should be optional as in (37) and (33). This is borne out by (41), where the topic is below the optional *que*, while in (39) it is above.

(41) *Te preguntan (que) elpréstamo_{Topic} para qué lo quieres.*¹³
 you ask-IND.PRS.3PL COMP the loan for what it want-IND.PRS.2SG
 ‘They ask you what you want the loan for.’

Finally, in (33), (37) and (40) *que* and the interrogative item *qué* have a clear different role, as opposed to (39) where the second *que* seems to be more a resumption of the first, a kind of repair strategy, than a special function bearer.

An alternative interpretation would be following Roberts (2004: 305). For him the complementizer has as default value ‘declarative’. It does not hence need any further element to be made precise.

In 4.5 we make another proposal based on (38) and the presence of one and only *que*.

Purely syntactic analyses have not allowed us to make a decision. Let us attempt to address the problem on the syntax/semantics interface side.

4. Adverbs in embedded clauses and the syntax-semantic layering of the clause in the frame of Functional Grammar

4.1. Framework

It has been reckoned for a long time that the order of the adverbs in the sentence is not free, but corresponds to a subjacent layering of the sentence. The sentence structure is more or less

fine-grained, depending on the chosen theory (cf. Cinque 1999, Dik and al. 1990). Schweikert (2005), based on Cinque (1999), offers a way to reconcile the two approaches.

4.1.1. A survey of *Functional Grammar*

Basically, in FG (Dik et al. 1990 ; Dik 1997) it is proposed that the clause has four different layers :

- 1) core predication,
- 2) state of affairs,
- 3) proposition,
- 4) speech act.

Here is a summary of FG, extremely simplified. A basic core predication gets by means of an operator further specification (time, place and so on) that transforms it into a state of affairs. This state of affairs gets a truth value (and many other properties) and becomes a proposition. Finally, the proposition gets an illocutionary force and becomes a speech act.

If this is true, there may be a manifestation of the boundaries between each layer. This is shown by the difference of modification. Each layer takes as a modifier a different range of adverbials.

In the following, tests¹⁴ are provided for distinguishing between two high layers (interpersonal = speech and modal layers/speaker-oriented/propositional layers ; and representational = state of affairs and core predication layers), and then between two sublayers.

The adverbials of the interpersonal level can neither be focalized nor questioned (42) ; they cannot be resumed with the rest of the sentence by a proform. (43) is opposed to (44), which is modified by another type of adverbial.

(42) * *Does India **probably** face famine ?*

(43) * *He'll take his umbrella **in case you are wondering** and so does Ann.*

(44) *He'll take his umbrella **in case it rains** and so does Ann.*

The adverbials of the representational level can be focalized, they constitute a unity with the core predication and are selectionally tied with the predicate's properties (telicity, control...). I put aside any further examination of the representational level which would be beyond the aim of this paper.

Within the interpersonal level, two sublayers can be distinguished. Some adverbials can appear at the top of any sentences while others cannot ((45), (46)). The former seem then to be able to combine with any type of speech acts. They vouch for the existence of the speech act layer. The latter must be between them and the representational level, namely in the propositional layer.

Proposition satellites in general presuppose the speaker's positive commitment to the truth of the proposition he presents. These satellites are therefore largely *restricted to declarative sentences*. They can be said to operate inside the illocutionary layer. Illocutionary satellites, on the other hand, operate outside the illocutionary layer, which is shown in their relative freedom to *occur with any kind of sentence type*. (Dik et al. 1990: 55) (Emphasis mine)

(45) *Seriously/***hopefully**, how do I look ?*

(46) *Honestly/***Probably**, let's not tell him about it.*

This structure can now be refined with Schweikert's (2005) assistance.

4.1.2. *Schweikert (2005)*

Here is the motivation for Schweikert's organization of Cinque's (1999) hierarchy:

Cinque's hierarchy [see below under (47)] of adverbs can be subdivided into three different groups with respect to scope relations. The first group consists of all adverbs sitting in Modvolitional or above. If we find them in front of any thematic role (temporal or lower, not evidentials) they are ambiguous between a wide scope and a narrow scope interpretation. If one PP of the kind under consideration is found to their left, they have only narrow scope over the constituent immediately to their right.

The second group – between prospective and habitual aspects– have the above behavior with respect to locative and lower thematic roles. With higher thematic roles they show a different behavior. If they precede these PPs they get only narrow scope interpretation and the sentence get slightly degraded down to ungrammatical.

The third group consists of the lowest part up to Mod ability. All adverbs found here have their unmarked position to the right of all prepositional sentence modifiers. (Schweikert 2005: 214–215)

It must be added that, in the first class, the adverbials corresponding to MoodP_{speech act} are obviously higher, but do not show the scope ambiguity of the adverbials just below them. They must thus be characterized as a separate class.

(47) *Combining a fine- and a coarse-grained hierarchy.*

(1) MoodP_{speech act} >

(2) MoodP_{evaluative} > MoodP_{evidential} > ModP_{epistemic} > TP(Past) > TP(Future) > MoodP_{irrealis} > ModP_{alethic} > Temporal / Starting Point of ongoing event / Starting Point of closed event / Elapsed Time of ongoing event / Atelic Duration > AspP_{habitual} > AspP_{repetitive(I)} > AspP_{frequentative(I)} > **ModP_{volitional}**

(3) AspP_{celerative(I)} > TP(Anterior) > AspP_{terminative} > Asp_{continuative} > AspP_{proximative} > Asp_{durative} > AspP_{generic/progressive} > **AspP_{prospective}** > Locative > Comitative > Benefactive > Reason > Source > Telic Duration / Secondary Duration > Goal > Malefactive > Instrumental / Means / Path > Matter > Manner >

(4) ModP_{obligation} / ModP_{permission&ability} > AspP_{Completive} > VoiceP > AspP_{celerative(II)} > AspP_{repetitive(II)} > AspP_{frequentative(II)}

Hence, we end up with two hierarchies, a fine-grained and a coarse-grained one. Each level of the coarse-grained divides into a fine-grained structure. But what is especially interesting is that we get four classes, that is exactly the same number as in FG, and that, with completely different evidence and tests, the results are very close, if we except some borderline hesitations, even in native speaker judgements. This hierarchy is therefore highly reliable.

To what extent does the first level of the hierarchy correspond to the division of generative grammar between CP, IP, VP? It is hard to tell. According to Cinque, this is a matter of split-IP. Nevertheless, as we saw above in the examination of Haegeman's (2006) proposal, what she names 'speaker deixis' and corresponds to MoodP_{speechAct} to ModP_{epistemic} is located within the low part of the CP. For Cinque (1999: 84), MoodP_{speechAct} is rather the uppermost part of the IP, albeit it could also move up until Spec, Force. This is based on the position below the focus, but optionally above the uppermost TopP. Moreover, there are good arguments to say

that at least some aspectual properties should be part of the VP. Thus, this area remains fuzzy and we prefer adopt the position developed in the next section.

4.1.3. *Syntactic mapping*

In the introduction and after the examination of the left periphery of the clause, we claimed that the last proposal would be more semantic. However, we have used only syntactic tests so far. What they did, was merely to reveal the semantic layering. Following Ernst (2002), we assume that as far as the adverbials are concerned, we are dealing with *a mapping of the semantics onto the syntax*.

Let us have a look at an example to see how this works.

A location adverbial applies to a state of affairs.

An epistemic adverbial applies to a proposition.

Now, if one wishes to combine the two adverbials, what will be the ordering? Let us take an example. Let *run(dog)* be a core predication. Through the ‘state of affairs’ operator, it becomes a state of affairs. Then it can be modified by an adverbial like ‘in the street’. One gets (49). One can then apply the ‘propositional’ operator and then modified the obtained proposition with an epistemic adverbial such as *probably*. One gets (50).

(48) *A dog is running.*

(49) → *A dog is running **in the street**.*

(50) → *A dog is **probably** running **in the street**.*

Now if we reverse this, we can apply the ‘state of affairs’ operator. We get (52), apparently unchanged. Then the ‘propositional’ operator applies. And we can modify it with *probably*. But if now we want to add the information ‘in the street’, you are applying a state of affairs modifier to a proposition. The result is thus predicted to be infelicitous. Indeed, (54) and (55) are out.

(51) *A dog is running.*

(52) → *A dog is running.*

(53) → *A dog is **probably** running.*

(54) **A dog is running **in the street probably**.*

(55) ****In the street** a dog is **probably** running.*¹⁵

Therefore, the linear ordering of the adverbials is nothing else than the reflection of the ordering of the operators. Adverbials do not have to head the part of the sentence they have scope over, provided that their relative ordering is respected. This means that in (53), *probably* need not be in front of the sentence.

4.1.4. *Results*

It is crucial to note that we agree with Cinque (1999) and Schweikert (2005) on the description yielded by their theories, but not on how they account for it. By transferring some properties assigned to the syntax to the semantics and stressing the primacy of the semantics over the syntax, we can get the right adverb order for free, without facing the issue of different adverb placements, since everything gets *relative*.

4.1.5. Cinque's (2004) restructuring

A last note will be on Cinque's (2004) application of this hierarchy. In this paper (and some previous ones) he claims that the hierarchy of functional heads is the best way to account for restructuring effects. He argues that:

The verbs that enter the 'restructuring' construction appear to correspond to distinct heads of (3), in the sense that each seems to lexicalize the content of one or another functional head. (...) Only those verbs which happen to match semantically the content of a certain functional head admit of two distinct possibilities. They are either regular verbs, heading a VP (...) or 'functional' verbs, directly inserted in the head position of the corresponding functional projection. (Cinque 2004: 1–2)

The common idea between Cinque's proposal and restructuring is that with two potential clauses we make one. But they differ crucially on the fact that with restructuring two verbs merge into a single one, whereas in Cinque's theory the first one is downgraded from the status of verb to the status of functional modifier.

Our proposal is an extension of this theory. Instead of inserting the verb in, say, the $\text{ModP}_{\text{permission}}$, we inserted it in $\text{MoodP}_{\text{speech act}}$, not as a head, but as a modifier. What we look at now is whether we are (always, sometimes, never) dealing with a reconstruction case. We must especially focus on mono-/bi-clausality and the way speech act or epistemic verbs become functional, since it is not straightforward or even counterintuitive.

4.2. Hypotheses

I would like to remain agnostic as to where in the IP or CP the adverbials show up. I am only going to use the relative ordering and base hypotheses on it, which are reminiscent of hypotheses iii) and iv) of Section 1.5.

A) If the complement of a declarative SAP is a speech act, it should be able to retain the whole range of adverbials.

B) If, on the contrary, the SAP bears the illocutionary force, everything that goes along with it should appear in the matrix clause, for example, the speech act adverbials. If this second hypothesis is on the right track, we expect this behavior to be recursive and to apply to lower levels. For example, after a verb of thinking, some (lower than speech act) adverbials are predicted to be excluded.

4.3. Data and analyses

In the French sentence (56), the adverb *sincèrement* is tied with the uppermost level, $\text{MoodP}_{\text{speech act}}$. When embedded under a verb *say* the result (57) is not acceptable. This seems to confirm the second hypothesis.

Now, if we enter the high level, into a fine structure, such as the level (2) under (47), we can see that the result is the same. Embedding (58), that contains an evidential adverbial *paraît-il* 'allegedly' under *penser* 'think' yields (59), that is an evidential adverbial — *paraît-il* — cannot be embedded under an epistemic operator such as *penser* 'think', given that the functional order is evidential-epistemic, and not the other way around.

This leads us to two conclusions. a) It is the confirmation that the order of the operators and functions matters at the fine-grained level as well as at the four-layer one (what we saw in Section 4.1.1). b) This is an indication that the same reasoning can be applied between a

matrix predicate and the structure of the embedded clause as between two adverbials in a root clause.

- (56) *Sincèrement*, Anne a trompé Jérôme.
Sincerely, Anne deceived Jérôme.
- (57) ?? Eric a dit que *sincèrement* Anne avait trompé Jérôme.
Eric said that sincerely Anne had deceived Jérôme.
- (58) Anne a, *paraît-il*, vendu son téléphone.
Anne has allegedly sold her phone.
- (59) ?? Eric pense que Anne a, *paraît-il*, vendu son téléphone.
Eric thinks that Anne has, allegedly, sold her phone.

We must now deal with further objections. We assumed above that the same effects should appear at lower levels.

(60) is strange to most French speakers. Since *penser* and *probablement* rank among the same class of epistemic items, it was expected that they would not cooccur. Likewise (61), where the adverb is in the matrix clause, is ruled out by our theory. But why is (60) for everyone more acceptable than (61)?

- (60) ? Eric pense que Anne a *probablement* vendu son téléphone.
Eric thinks that Anne has probably sold her phone.
- (61) * Eric pense *probablement*¹⁶ que Anne a vendu son téléphone.
Eric thinks probably that Anne has sold her phone.
- (62) Eric a *sincèrement* dit que Anne avait trompé Jérôme.
Eric has sincerely said that Anne had deceived Jérôme.

Moreover, why is it that (62), where we are dealing with a structure parallel to (61) with a declarative SAP, is fully acceptable? Both questions are addressed in the next section.

4.4. Adverbials in matrix clause

The first question has its answer in the very fact that *probablement* and *penser* range over the same epistemic area. That make them concurrent, but also allows *probablement* to become a precision tool for *penser*. Let us see how.

In (60), *Probablement* may be understood as a further indication about the epistemic state of the matrix subject, by pointing at the part of the embedded clause concerned by the belief state. Furthermore, *probablement*, as well as *probably* in English, can have a focus interpretation or at least a narrow scope interpretation, which is not possible with *franchement* or *sincèrement* that take in their scope the whole sentence, or change their interpretation to intensity (*very*) when they have scope on a single element.

Cinque (1999: 30–32) also calls for the focus explanation in order to account for anomalous behaviors. One of his argument is that the at issue adverb forms a constituent with the element it precedes. This is borne out by examples like (63), where the adverb is clefted with *Anne*.

- (63) C'est *probablement* Anne qui a vendu son téléphone.
It is probably Anne who has sold her phone.

It is not clear to me whether the precision and the focus functions can be reduced to a single one. Anyway, be the function simple or twofold, it does not lose its explanatory power, as shown by the following tests.

First of all, (63) can be embedded under *penser* ‘think’ (64), whereas the non-cleft version is highly strange to French speakers, even with a stress on *Anne*, albeit it improves a little the sentence (65).

- (64) *Jacques pense que c’est probablement Anne qui a vendu son téléphone.*
 Jacques thinks that it is probably Anne who has sold her phone.
- (65) ?*Jacques pense que probablement ANNE a vendu son téléphone.*
 Jacques thinks that probably Anne has sold her phone.

Second, for the speakers that do not like (60), the examples (66), (67) and (68) are highly improved or even fine.

- (66) *Eric pense que Anne a probablement acheté un téléphone.*
 Eric thinks that Anne has probably bought a phone
pour son mari dans le train.
 for her husband in the train.
- (67) *Eric pense que Anne a acheté un téléphone dans le train*
 Eric thinks that Anne has bought a phone in the train
probablement pour son mari.
 probably for her husband.
- (68) *Eric pense que Anne a acheté un téléphone pour son mari*
 Eric thinks that Anne has bought a phone for her husband
probablement dans le train.
 probably in the train.

In (68) and (67), *probablement* has been lowered and placed just to the left of the element it has scope over. In (66), it remains ‘in situ’ but, as well as *only*, it can have scope separately on each element downwards. It must be noticed that the scope is on an adverbial PP or a low argument rather than on an argument close to the verb. This phenomenon pertains to the focus effects. There has been an event of ‘Anne buying a phone in the train’ or of ‘Anne buying a phone for her husband’, and this event is said to have taken place, respectively for ‘her husband’ or ‘in the train’ in Eric’s opinion. This translates into the pseudo logical formulas. (66) is ambiguous between (69), (70) and (71); (70) corresponds to (67); (71) corresponds to (68).

- (69) *Penser [je ; (Acheter (anne, téléphone, mari))]*
 (70) λx *Acheter (anne, téléphone, x) & Penser {je ; [λx Acheter (anne, téléphone, x) (mari)]}*
 (71) *Acheter (anne, téléphone, pour son mari) & Penser {je ; LOCATION <[Acheter (anne, téléphone, pour son mari)], [dans le train]>}*

The second question concerned the contrast between (61) and (62), repeated here as (73) and (74).

(74) would be the outcome of the embedding of (72) under a predicate *dire* ‘say’. One would like to keep the information ‘sincerely’, but for the aforementioned reasons, the adverb cannot remain in the *quel/that*-clause: (75) is out. It must then rise into the matrix. That yields (74) or (76).

- (72) *Sincèrement, Anne a trompé Jérôme.*
 Sincerely, Anne deceived Jérôme.
- (73) **Eric pense probablement¹⁷ que Anne a vendu son téléphone.*
 Eric thinks probably that Anne has sold her phone.

- (74) *Eric a sincèrement dit que Anne avait trompé Jérôme.*
Eric has sincerely said that Anne had deceived Jérôme.
- (75) *??Eric a dit que sincèrement Anne avait trompé Jérôme.*
Eric said that sincerely Anne had deceived Jérôme.
- (76) *Eric a dit sincèrement que Anne avait trompé Jérôme.*
Eric has said sincerely that Anne had deceived Jérôme.

I claim that this analysis is not accurate. Ernst (2002) argues that a speech act adverb like *frankly* is merely a manner adverb that has scope on an implicate performative operator or predicate. This is true, but the only parallel that can be drawn is between (77) and (78) where the first person is used, for a performative predicate is a first person singular at a present tense.¹⁸

- (77) *Je te dis franchement que je ne suis pas content.*
I to you say frankly that I am not satisfied.
- (78) *Franchement, je ne suis pas content.*
Frankly, I am not satisfied.

However, (78) through (81) as well as (72), (74) and (75) have distinct truth conditions. (79) may be true even if Nicolas is not aware that he is frank by saying that he is angry. (80) and (81) cannot get this interpretation either. Therefore the asymmetry between (72) and (74), though hidden in some situations, obtains, as well as between (60) and (61). It has been blurred by the fact that there is another interpretation for (74), but not for (61).

- (79) *Nicolas me dit franchement qu' il n'est pas content.*
Nicolas to me says frankly that he is not satisfied.
- (80) *??Nicolas me dit que franchement il n'est pas content.¹⁹*
Nicolas to me says that frankly he is not satisfied.
- (81) *Franchement, Nicolas n'est pas content.*
Frankly, Nicolas is not satisfied.

Consequently, (74) and (76) are isolated sentences that cannot be derived from (72). (73) is fully acceptable if *probablement* is a judgment of the speaker's on Eric's thinking, as well as in (74), (76) and (79) *sincèrement* and *franchement* are evaluations of the speaker's over Eric's way of speaking rather than the way Eric or Nicolas *intended* to utter their statements.

4.5. Consequences

4.5.1. Predictions

Going back to the two hypotheses A) and B), B) is borne out. Given that the matrix predicate is in charge of bearing the illocutionary force, it embeds a clause which contains the layers under that of speech act in (47), namely a proposition. This predicts that any other adverb should be able to show up within the complement clause. Let us test it with evaluative, evidential and epistemic adverbs, respectively illustrated by (82), (83) and (84).

- (82) *? Eric a dit que Anne avait, malheureusement, trompé Jérôme.*
Eric has said that Anne had, unfortunately, deceived Jérôme.
- (83) *? Eric a dit que Anne avait, paraît-il, trompé Jérôme.*
Eric has said that Anne had, allegedly, deceived Jérôme.
- (84) *Eric a dit que Anne avait probablement trompé Jérôme.*
Eric has said that Anne had, probably, deceived Jérôme.

The first two are slightly marginal, maybe due to their proximity with the highest level. The last one is perfect. The hierarchy is respected with *penser* as well, since the acceptability increases in the same order: (85), (86), (87).

- (85) * *Eric pense que Anne a, malheureusement, vendu son téléphone.*
Eric thinks that Anne has, unfortunately, sold her phone.
- (86) ?? *Eric pense que Anne a, paraît-il, vendu son téléphone.*
Eric thinks that Anne has, allegedly, sold her phone.
- (87) ? *Eric pense que Anne a probablement vendu son téléphone.*
Eric thinks that Anne has probably sold her phone.

Therefore, the level unavailable to *penser* is the propositional level, and it follows from this that *penser* should embed something lower such as a state of affairs or an event (see Section 5).

4.5.2. Back to the Spanish data

If we now go back to (38), repeated here as (88) for convenience's sake, we can provide a semantic explanation of the agrammaticality of the *que*-doubling. The fact that *decir* (*say*) takes as complement a proposition, is reflected within the syntax as the appearance of a single *que*. Employing another *que* would boil down to quoting a proposition. But what can be quoted is a speech act, something that has an illocutionary force.

- (88) *Dij-e* (**que*) *que se fuer-a* *Juan.*²⁰
say-IND.PST.1SG (*comp) comp leave-SBJV.PRET.PRF.3SG Juan
'I said that Juan should leave.'

Giving a proof for this assumption and an answer as to why a proposition cannot be quoted as this is far beyond the scope of this paper, but it can be informally captured by the following reasoning.

"A dog is running in the street" as a proposition is not the same as an assertion. As a proposition, it can be true or false. But that does not mean that it has been uttered and shared, namely proposed in a discourse situation by a speaker to a hearer in order for her to add it to her information state.

What makes the propositional content of a 'sentence' an assertion is either a speech act operator in a root clause, or, if embedded, the matrix predicate.

5. Theoretical consequences of the (47) hierarchy and the Greek puzzle

The main contribution of this account is the improvement of the functional hierarchy of the clause. We have taken the first step towards a reconciliation of functional and generative grammars. They are not incompatible in their principles, indeed their concerns are far removed from one another. We saw an application of this new functional hierarchy. Let us have a look at some related applications which bear out this hierarchy.

5.1. The tense/time issue

Another application is in the domain of the tense/time problem. In (47) time layers are spread all along the hierarchy. For example, the propositional level contains absolute time level, and therefore finite level, since generally only finite verbs can express the absolute time. The issue

then arises as to why some languages allow non finite complementation after verbs of thinking as AcI in Greek, or small clauses elsewhere.

The solution is straightforward if we think that, according to our above data, the complement of a verb of thinking should be an event, a situation or a state of affairs, depending on the framework one is working in. If this is true, it has only to undergo the temporal and other constraints corresponding to the third and fourth levels claimed in 4.1.2.

Given that a verb of thinking ranks among epistemic operators, the layers between Temp(Past) and AspP_{celereactive(I)}²¹ are optional. That is why Comp-clauses and a finite verb can occur as well. But what is thoroughly excluded is a non-finite clause denoting an entity of a lower type than event/state of affairs (for example core predication in FG). This prediction is borne out by the fact that we cannot have, in Classical Greek, a clause that does not express the time relation with the matrix time. In (89), *katalipein* is an aorist²². If the clause had express something lower than an event, it would have lack the TP(anterior) layer. The aorist would have expressed aspect and the clause would have had a different meaning, namely ‘I consider that I am starting leaving...’.

- (89) *Nomiz-ô* *archê-n* *meizô* *kai tounam-a*
 think-IND.PRS.1SG power-ACC.F.SG greater-ACC.F.SG and the.name-ACC.PL
t-ês *basilei-as* *t-ô* *presbuter-ô* ***katalip-ein***.²³
 the-GEN.F.SG kingship-GEN.SG the-DAT older-DAT leave-INF.AORISTE
 ‘I consider that I left to your older brother a greater power and the title of king.’

In a nutshell, the uppermost boundary for the complement of verb of thinking is expected to range between TP(past) and AspP_{celereactive(I)}, but not lower. This enables parametrization among languages.

5.2. The Greek puzzle

We can now understand why in languages with a rich complementation system, declarative SAPs depart from verbs of thinking. Going back to Classical Greek and the first issue of the paper, we can therefore ask the question why one of their constructions is shared with verbs of thinking. In fact, the AcI is rarely employed, except with impersonal forms as ‘it is said that...’ that are probably more related to evidentials than to speech acts (90).²⁴ This means that with them we are already in the lower domain, the propositional domain.²⁵

- (90) *Nikia-s* *ho* *Nikêrat-ou* *lege-tai* *epistatê-n*
 Nicias-NOM the-NOM Niceratos-GEN say-IND.PRS.PASS.3SG manager-ACC
eis targurei-a *pria-sthai talant-ou*.²⁶
 for the.silver.mines-ACC.N.PL buy-INF talent-GEN
 ‘Nicias, son of Nicaratos, is said to have given a whole talent for a manager of his silver-mine.’

This does not account for languages as Classical Latin, where verbs of speaking are obligatorily followed by an AcI, without tense marks. Note however that languages of this type are not ruled out by our account, given that it makes predictions as to which is the uppermost boundary of a complementation type, but not as to the lowest. We can stipulate for Latin a grammaticalization of an evidential structure, this last feature being retained.

Finally, verbs like *want* are predicted not to be able to have a tensed complement, given that they sit very low in the hierarchy, in ModP_{obligation} / ModP_{permission&ability}. This is borne out by every language I am aware of, even when a finite verb can occur, it is not tensed (which

crucially does not mean that they are not finite). On this point Cinque's 2004 is highly convincing.

6. Conclusion

Based on Schweikert's (2005) hierarchical structure, the tests show that complex clauses behave like simple ones, at least with respect to the functional layering. Interestingly, there are some borderline cases like the use of *credo* + subjunctive without complementizer in Italian (Giorgi and Pianesi 2005). In order to account for the behavior of *credo* in this type of sentences, they argue for a movement that raises *credo* to a position above that expected, namely, the epistemic position, in order to check certain verbal features. This is typically a borderline case.

If I am right, the matrix predicate has to be taken into account as the first layer of the embedded clause. This tells us that declarative SAPs do not embed a speech act, but a proposition, and, consequently, that propositional predicates embed state of affairs/event, rather than proposition.

The rough scheme of the study would be as in (91)/(92). In (91) the elements between the two bold-faced brackets are reinterpreted and merged into one and only continuous range of ordered adverbials. This is triggered by the incompleteness of the embedded structure. (92) provides us with the outcome. In (93) and (94) we have what comes in generative framework.

(91) $[(\dots)_{adverbials} [VP \textit{say} [CP [(\dots)_{adverbials} [VP]]]]]$

(92) $\rightarrow [(\dots)_{adverbials} (MoodP_{speech \ act} P [MoodP_{speech \ act} ' [VP \textit{say}]) (\dots)_{adverbials} [VP]]]]$

(93) $[IP (\textit{functional projections}) [VP \textit{say} [CP [IP (\textit{functional projections}) [VP]]]]]$

(94) $\rightarrow [IP (\textit{functional projections}) (MoodP_{speech \ act} P [MoodP_{speech \ act} ' [VP \textit{say}]) (\textit{functional projections}) [VP]]]]$

This study does not allow us to decide between the syntactic (Cinque 1999) and the semantic (Ernst 2002) accounts of adverb behavior. It does not help either in the determination of the left-periphery structure, as to which I will remain agnostic. It is only sure that the hierarchy, either semantic or syntactic, between adverbials is fixed and probably universal.

We can also wonder whether we are able to find a predicate for each functional head.

7. Notes

¹ Demosthenes, *Ad Phormionem*, 13.

² Demosthenes, *Ad Midiam*, 121.

³ Isocrates, *Aeropagiticus*, 72.

⁴ E represents the Force level, X the propositional level, e the event/State of Affairs level... see 4.1.1 for further precision.

⁵ The double slash indicates a break in the structure.

⁶ The simple crossing indicates what has been added to the former proposal in (9).

⁷ These notions will be explained when we will turn to this hypothesis.

⁸ Cf. Rizzi (2001) « The other subclass of indirect questions selected by such verbs as “find out”, “discover”, etc., not allowing initial que, nor an initial topic, may perhaps be analyzed as not involving the Force layer at all. »

- ⁹ Portuguese data contradict this analysis, for the recursion of *que* (that) has no other limitation than computational. Hence it can be argued that *que* is a topic marker, given its infinite recursivity. For more details, see Mascarenhas (2007).
- ¹⁰ Data are from Lahiri (2002).
- ¹¹ From Demonte & Fernández-Soriano (2009).
- ¹² From Demonte & Fernández-Soriano (2009).
- ¹³ This sentence is from Lahiri (2002).
- ¹⁴ Examples are from Dik et al. (1990).
- ¹⁵ Without a pause after ‘in the street’.
- ¹⁶ The sentence is out in the sense where *probablement* is related to the subject opinion (Eric) and not to the speaker's.
- ¹⁷ The sentence is out in the sense where *probablement* is related to the subject opinion (Eric) and not to the speaker's.
- ¹⁸ But the pragmatic effect is not the same. The sentence with ‘je te dis que’ has less strength than without.
- ¹⁹ It becomes fine with a quotational intonation, as in free indirect speech.
- ²⁰ From Demonte & Fernández-Soriano (2009).
- ²¹ See the hierarchy under (47).
- ²² It marks anteriority.
- ²³ Xenophon, *Cyropaedia*, 8, 7, 11.
- ²⁴ See Fournier (1946: 145). On 272 AcI in Herodotus’ histories, only 9 are introduced by something else than *legousi* “one said” or *legetai* “it is said”.
- ²⁵ See Myong Soon (2004) for details on French data.
- ²⁶ Xenophon, *Hellenica*, 6, 4, 37.
- ²⁷ Further evidence for this structure is provided in the appendix.

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