

# *Factive Complements and Wh-Movement in Modern Greek\**

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## 1 Introduction

The purpose of this paper is to discuss the structure of factive complements in Modern Greek (MG) and consider the differences between them and their English counterparts. The crucial point is that factive complements in MG are introduced by a particular complementizer, namely *pu*, as opposed to the non-factives, which are introduced by *oti*. The main property of *pu*-complements that will concern us here is that they block extraction of both arguments and adjuncts. In order to provide an account for this phenomenon I will argue that (a) the complementizer in question possesses the feature [+definite] (cf. also Christidhis (1986)), and (b) that factive complements have an empty operator in the spec position of CP. These two are crucially related in section 4.3. Thus, the unavailability of extraction out of a *pu*-clause will follow on the basis of the properties (a) and (b).

Sections 2-3 are introductory. I discuss the data and the range of constructions in which *pu* is used. In addition to that an account of the complementizer in question and of the properties of factives complements is provided. In section 4 some possible explanations for the unavailability of wh-movement out of factive complements are presented. In particular, sections 4.1-4.2 discuss the analysis that assimilates factive complements to complex NPs. The CNP analysis is ultimately rejected and in section 4.3 it is argued that *pu*-complements are similar to tensed-wh-islands: the claim is that the presence of an empty operator in the Spec, CP conspires with the [+definite] complementizer *pu*, hence wh-movement of both arguments and adjuncts is blocked. Finally, in section 5 a more elaborated analysis of factive complements in English and MG is attempted along the lines of the theory of Locality (cf. Manzini, 1992a&b).

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## 2 The MG complementizer system: the case of *pu*

In Modern Greek (MG) there are two complementizers that correspond to the English *that*: *oti* and *pu*. While *oti* mainly introduces sentential complements of verbs, *pu* can also be used in a number of other constructions as the examples below indicate:

### (i) Relative clauses.

- (1) [DP to vivlio [CP *pu* to opio aghorases]].  
the book that/which bought-2s  
"The book that you bought."

### (ii) Cleft-constructions.

- (2) ine [DP I SIMPERIFORA TIS] [CP *pu*\*tin opia dhen anexome].  
is the behaviour-hers that/the which not stand-1s  
"It is her behaviour that I cannot stand."

### (iii) Matrix exclamatives.

- (3) [AP ti ore] [CP *pu*\*i opia ine i Maria].  
what nice that is the Maria  
"How nice Maria is!"

Notice that in (1) the relative clause may also be introduced by a relative pronoun. However, in (2)-(3) only *pu* is allowed while the relative pronoun is excluded. In the (i)-(iii) cases there is a predication relation involved: there is a predicate, i.e. the *pu*-clause, and a "subject", i.e. the DP (or D in the case of restrictive relatives), or eventually an AP in the case of exclamatives. The standard assumption with respect to relative clauses introduced by a Complementizer, as well as cleft constructions and exclamatives is that they involve a null operator in the [spec, CP] position (Chomsky, 1977). Notice that these empty operator constructions are the ones that do not display weak crossover (WCO) effects. According to Lasnik & Stowell (1991) these constructions are instances of weakest crossover, due to the quantificational status of the empty operator: it is not a true Quantifier Phrase (QP) since it does not range over a non-singleton set (i.e. two or more) of individuals, but it has a fixed reference. I will return to the relevance of this point with respect to *pu*-complements in section 4.3.

As far as sentential complements introduced by *pu* are concerned we distinguish the following classes of verbs:

(iv) Perception verbs.

- (4) a. ton idha *pu* efaghe to gliko.  
him-saw-1s that ate-3s the cake  
"I saw him eating the cake."

Perception verbs in MG also subcategorize for *oti* and *na*-complements:

- b. idha *oti* efaghe to gliko.  
saw-1s that ate-3s the cake  
"I saw that he ate cake."  
c. ton idha *na* troi to gliko.  
him-saw-1s prt eat-3s the cake  
"I saw him eat the cake."

Notice however, that according to the type of the complement clause selected we get a different interpretation of the perception verb: in (4a) we have a construction that is usually referred to as pseudo-relative (cf. Cinque, 1991b). In (4b), on the other hand the verb "idha" has the meaning of an epistemic verb, while in (4c) the interpretation we get is the one of direct perceptual report (cf. Higginbotham, 1983).

(v) Factive verbs.

- (5) a. thimame *pu* se sinandisa stin aghora.  
remember-1s that you-met-1s at the market  
"I remember that I met you at the market."

Verbs like "thimame" may also take an *oti*-complement:

- b. thimame *oti* se sinandisa stin aghora.  
remember-1s that you-met-1s at the market  
"I remember that I met you at the market."

(vi) Psych-verbs.

- (6)        *stenohorieme pu tha fighis.*  
              am-sorry-1s that will leave-2s  
              "I am sorry that you'll leave".

In the present paper I will discuss the case of *pu*-clauses as complements of factive verbs. In order to do so I will explore the properties of this particular complementizer and how these affect *wh*-movement out of a factive complement.

### 3.1 A preliminary account of the data.

One of the main properties of *pu*-complements in MG is that they block extraction of any sort, that is of both arguments and of adjuncts. Consider the following examples:

- (7)    a.    \* *pjon thimase pu sinandises?*  
              who remember-2s that met-2s  
              "Who do you remember that you met?"  
              b.    \* *pote thimase pu sinandises ti Maria?*  
              when remember-2s that met-2s the Maria  
              \* "When do you remember that you met Maria?"  
   (8)    a.    \* *ti metanioses pu aghorases?*  
              what regretted-2s that bought-2s  
              "What did you regret that you bought?"  
              b.    \* *pote metanioses pu efighes?*  
              when regretted-2s that left-2s  
              \* "When did you regret that you left?"

As the examples in (7)-(8) show, extraction of both arguments and adjuncts out of a *pu*-clause leads to ungrammaticality. Consider now the case where we have an *oti*-clause as complement of a factive verb, as in (7') below. What we notice is that the pattern we get with respect to extraction is different: adjunct extraction is blocked as in (7'b), while argument extraction is not, as in (7'a):

- (7') a. (?) *pjon thimase oti sinandises?*  
 who remember-2s that met  
 b. \* *pote thimase oti sinandises tin Maria?*  
 when remember-2s that met-2s the Maria

The pattern exemplified by the MG examples in (7'a-b) is in fact the one that we encounter in the case of English factives, as in (8a-b):

- (8) a. who did you forget that you met?  
 b. \* why did you forget that you met him?

To sum up: it seems that *oti*-complements of factive verbs pattern with their English counterparts introduced by *that* as far as wh-movement is concerned. The question that arises at this point is why *pu*-complements block the extraction of both arguments and adjuncts. In order to provide an answer to this question we will consider the following points: does the complementizer *pu* have any idiosyncratic properties? And if that turns out to be the case how do these properties affect wh-movement? It seems that in this case we are dealing with a strong island, since wh-movement of both arguments and adjuncts leads to ungrammaticality.

### 3.2 On the properties of *pu*

The standard assumption in the literature regarding factive verbs is that the truth of their embedded complement is presupposed (cf. Kiparsky & Kiparsky, 1970). However, if factivity is a property of the verbs, then we have problems with the following pair of sentences in MG (from Christidhis, 1981):

- (9) a. *thimame oti ton ixa sinandisi sto Parisi- an ke bori na kano lathos.*  
 "I remember that I had met him in Paris- however I may be wrong".  
 b. ! *thimame pu ton ixa sinandisi sto Parisi- an ke bori na kano lathos.*  
 "I remember meeting him in Paris- however I may be wrong."

As (9a) shows, when we have an *oti*-complement we can question the truth of the embedded clause, while with *pu*, as in (9b) we cannot. The problem is that, since in both cases it is the same factive verb involved we expect to find no differences arising with respect to the truth value of its complements: both

in (9a) and (9b) we expect to find presupposition of the embedded clause. However, it is only (9b) that seems to be pragmatically odd. What this implies is that only with *pu*-complements do we get the relevant notion of factivity. Let us assume at this point that factivity is a property of the complement the matrix verb selects<sup>1</sup>. This is quite clear in MG where factivity seems to be signalled by the choice of a particular complementizer, namely *pu*. The question then is the following: why is *pu* chosen? Christidhis (1986) argues on pragmatic grounds that *pu* possesses a [+definite] feature<sup>2</sup>. On this basis, he assumes that *pu* is a (clause) nominalizer; so *pu*-clauses are nominal complements due to the presence of the complementizer *pu*; thus, they resemble nominal constructions, headed by the definite article, i.e. DPs. Is there any additional evidence for this analysis? Consider in particular the [+definite] feature. As was already mentioned in section 2, *pu* is also used to introduce relative clauses instead of a relative pronoun. Notice that in MG the relative pronoun has to be preceded by the definite article, as in (10) below:

- (10)      o anthropos \*(o) opios irthe.  
             the man the who came-3s  
             "The man who came."

Hence, relative pronouns also need to be specified in some way for the [+definite] feature, irrespective of whether the head of the relative clause is definite or indefinite. In addition notice that there are languages like German where the relative pronoun has the same form as the definite article (*der, die, das*). It is worth mentioning that in other languages as well the complementizer selected for factive complements is different from the one used to introduce non-factives. Yiddish for example selects the complementizer *vos* for factives and relative clauses, while for non-factives it selects the complementizer *az* (cf. Diesing, 1990). Also Serbo-Croatian selects the complementizer *sto*, instead of *da*, for factives and relatives (see Christidhis (1981) for references).

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<sup>1</sup> This is reminiscent of the discussion in Progovac (1988), Laka (1990) that negative semantic information is never born by verbs such as *deny* but rather by their complementizers.

<sup>2</sup> Notice that an assumption of that sort is not completely new. Traditional grammarians of MG (cf. Triandafillidhis, M. (1941) *Neoelliniki Grammatiki (tis Dhimotikis)* [Modern Greek Grammar (of Dhimotiki)]. Organismos Ekdhoseos Dhidhaktikon Vivlion, Athens.) notice that *pu*, as opposed to *oti*, denotes something more real.

Let us then identify the crucial idiosyncratic property of *pu* with the [+definite] feature. Consider the implications this has for factivity. First of all, we expect to find differences in the semantics of *oti* and *pu*-clauses. In particular we expect that a *pu*-clause denotes a particular event. On the other hand, since *oti* is not specified for the [+def] feature, an *oti*-clause cannot denote an individual event, but can only denote a set of events, i.e. a proposition. This squares with the analysis of factive complements put forward by Hegarty (1991). He argues that *that*-clauses in English when used as complements of factive verbs are event-denoting (as is the case with gerunds); when they are used as complements of non-factives they denote a proposition. A similar argument was also made by Melvold (1986). The difference is exemplified in (11) (from Hegarty, op. cit.):

- (11) a. "They believe that Mary met Bill" means that they believe an event occurred (some event or other) in which Mary met Bill.  
 b. "They forgot that Mary met Bill" means they forgot the (actual, unique) event in which Mary met Bill.

For the time being we will assume that there is a clear-cut distinction between factive and non-factive complements in MG which is made explicit by the choice of the complementizer, namely *pu* for factives, and *oti* for non-factives.

In the following sections we will see what the implications of this analysis are for the structure of *pu*-clauses and consequently for the analysis of why extraction of arguments and adjuncts is excluded.

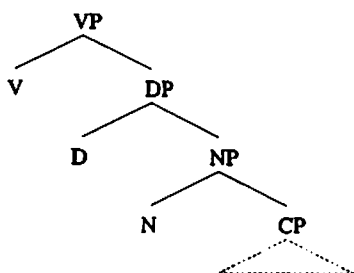
#### 4 Possible explanations

As was already mentioned, *pu*-clauses behave like strong islands, in the sense that they block movement of both arguments and adjuncts. The two immediate analogies to factive islands among strong islands seem to be the following: the Complex NP Island (CNP) and the tensed-wh-island. I will ultimately reject the CNP analysis of factive complements in favour of the analysis that assumes the presence of an (empty) operator in the Spec of CP, along with the complementizer *pu*.

#### 4.1 The CNP analysis

Let us first assume that in the case of *pu*-clauses we have a Complex NP Construction. The standard assumption (cf. Chomsky, 1986a) is that in CNPs movement is blocked because at least two barriers i.e NP (in current terms a DP (cf. Abney, 1987)) and CP, are crossed and this leads to a Subjacency violation:

(12)



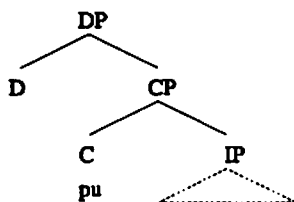
The question that needs to concern us here is the following: is there any evidence that we have a DP projection in *pu*-clauses? One possible solution would be to stipulate that the clauses in question have a DP-projection where the D head is empty. In fact this is the analysis proposed by Kiparsky & Kiparsky (1970) for the complements of factive verbs in English. Indeed they assume that in this way the semantic differences between factive and non-factive complements are reflected in the syntax. For example the D-structure of the sentence in (13a), with a matrix factive verb is assumed to be as in (13b):

- (13) a. I regretted [that I left].  
 b. I regretted [the fact [that I left]].

What (13b) indicates is that in this case we are dealing with a complex NP. The structural representation of both (13a) and (13b) is the one in (12) above. In (13a) the N-head is empty (the lexical content having been deleted), while in (13b) it is lexically filled.

Let us see how this analysis could work for the MG data. We could assume that in this case we have the following structure:

(14)



What we have to notice, however is that in MG the option of a DP dominating a CP is overtly available; this is the case of nominalized clauses (*to*-clauses). I have argued independently (cf. Roussou (1991) and also Drachman (1985) for a similar account) that nominalization of this sort takes place for Case reasons: namely when a CP is for example a subject or the complement of a preposition. What we should crucially notice here is that nominalization in this case takes place with *oti* and *na*-complements but not with *pu*, as the examples in (15) show:

- (15) a. *to oti* efighe...  
           the that left-3s  
           "That he left..."  
       b. *to na* fijs...  
           the prt leave-2s  
           "For you to leave..."  
       c. \* *to pu* efighe...  
           the that left-3s  
           "That he left..."

The immediate consequence of (15c), on the basis of what we said before about the interaction of Case and nominalized clauses, is that *pu*-clauses will be restricted to VP-internal positions, since they are not assigned Case. If we assume factive complements to have a DP projection, we cannot explain why *pu*-clauses cannot cooccur with an overt determiner. Furthermore, we cannot explain why *pu*-clauses cannot in fact occur in Case-marked positions, for example as subject or object of P (cf. (15c)). Therefore, a structure where

there is a DP projection above *pu* appears to be excluded on empirical grounds<sup>3</sup>.

A modified version of this approach would be to assume that in this case there is in fact a DP and that *pu* moves from C to D-position (as an instance of head-movement)<sup>4</sup>. The first question that arises is why *pu* should move to that position. Following, in essence the Principle of Least Effort (Chomsky, 1991) we will assume that movement cannot take place, unless necessary. We could assume therefore that *pu* has certain features such as [+definite] which cause it to move to the D position. The relevant structure is the one in (14), the only difference being that in this case C will move to the D-position. The advantage of this analysis is that if the head D is filled by the complementizer *pu*, that explains why we cannot have an overt determiner as well, and therefore why we will not encounter structures like the one in (15c). However, there seems to be a problem under this analysis as well. Given that in this case we have a DP, nothing should in principle exclude the presence of a *pu*-clause in a Case marked position, as in (16a), where the clause is in subject position (cf. the grammaticality of (16b) with the nominalised clause):

- (16) a. \* *pu efije toso grighora apodhiknii tin anipomonisia tu.*  
           that left-3s so quickly prove-3s the impatience-his  
           'That he left so quickly proves his impatience.'  
       b. *to oti efije toso grighora apodhiknii tin anipomonisia tu.*  
           the that left-3s so quickly prove-3s the impatience-his

The idea is that when Case marking takes place after movement of C to D, the Case Filter cannot see the internal structure of the DP; if so, it seems impossible in principle to rule out as ungrammatical a sentence like the one

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<sup>3</sup> There is also another problem, namely that there are some "factive" verbs that may take an *oti*-clause as their complement. If there is a DP projection available and given that this kind of structure is possible in MG the question is why we cannot have (b) below instead of (a):

- a. *ksehasan oti tus sinandise.*  
       forgot-3p that them-met-3s  
       'They forgot that he met them'  
       b. \* *ksehasan to oti tus sinandise.*  
           forgot-3s the that them-met-3p

<sup>4</sup> This alternative was suggested to me by Tsimpli (p.c)

in (16a), where we have assumed the presence of a DP projection, or indeed to predict the contrast with the *to oti* example in (16b).

## 4.2 An alternative to the DP-structure

Another possibility worth exploring is that *pu*-clauses behave like complex NPs though they do not require a DP projection. The argumentation will be built on the assumption that the feature [+definite] that the complementizer in question has is enough to assimilate a CP headed by it to a DP, hence turning the CP into a barrier. The idea is that *pu* in this case functions like the definite determiner in NPs. We could say that it is for this reason that *pu*-clauses behave like complex NPs. Let us consider how this analysis could account for the relevant facts, i.e. that wh-movement of any sort out of these complements is blocked. In order to do so we need to consider more carefully the case of DPs. In particular we have to answer the following question: is movement out of a DP (and to be more specific out of a definite DP) possible? Consider the following examples:

- (17) a. \* *tinis idhes* [<sub>DP</sub> *to vivlio t*] ?  
           whose saw-2s the book  
           "Whose book did you see?"  
       b. \* *pjion dhiatipose* [<sub>DP</sub> *tin apopsi* [<sub>CP</sub> *oti tha akoluthisi t*]] ?  
           whom expressed-3s the view that will follow-3s  
           \* "Whom did he express the view that he'll follow?"

In (17a) we have movement out of a definite DP, while in (17b) we have movement out of a CNP. In both cases the result is ungrammatical. In order to account for this ungrammaticality we have to assume that the DPs in question constitute a barrier and that therefore we have a Subjacency violation. If we follow Chomsky (1986a) the problem we encounter is that in both cases the DP is L-marked, hence it should not count as a barrier. However, the above examples indicate that there has to be a barrier of some sort. Cinque (1991a) stipulates, with respect to the CNP construction, that Nouns are not L-markers; hence the embedded CP in (17b) is a barrier, since it is not L-marked. Nevertheless, this proposal, apart from being a stipulation, does not lead too far, given that we still cannot account for the ungrammaticality of (17a) in the absence of an embedded CP.

An alternative would be an analysis that assumes DPs to differ from CPs, at least, in the following respect<sup>5</sup>: CPs are associated with an A'-position and for this reason movement can proceed successive cyclically under Subjacency, since the spec of CP (an A'-position) can function as an escape hatch for the moved phrase. Following standard assumptions in the recent literature (cf. Rizzi (1990), Cinque (1991a), Manzini (1992a)) we consider crossing of just one barrier as a Subjacency violation. Moreover, as in Manzini (1992a) we will assume that (i) maximal projections (XPs) are associated with exactly one A'-escape hatch and (ii) arguments cannot have an A'-escape hatch (cf. also Chomsky (1986a) where he argues that arguments cannot be adjoined to). If DPs are arguments the implication is that they cannot have an A'-escape hatch. In particular they can neither be adjoined to nor have an A'-spec (cf. Manzini, op. cit). What follows from this is that (definite) DPs will be intrinsic barriers to movement<sup>6</sup>. Bearing these points in mind let us examine the case of *pu*-complements. The argument runs as follows: if *pu*-complements resemble DPs by virtue of the [+definite] feature they possess, then they will also resemble DPs in that they will lack an A'-position. In other words we could say that the spec of CP is not present (i.e. does not project) in this case, excluding any kind of movement<sup>7</sup>. Notice that this proposal resembles the one discussed in section 4.1 in the following respect: they both assimilate *pu*-complements to DPs. The difference is that in the first case we have an (abstract) DP projection while in the latter case we are dealing with a CP-structure that only resembles a DP. The problem that arises with this proposal is related precisely to the fact that under it CP complements headed by *pu* are defective with respect to the presence of a [spec,CP]. The question is how the presence of a [+definite] Complementizer could in principle prevent

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<sup>5</sup> This possibility was suggested to me by Manzini (p.c).

<sup>6</sup>For a discussion of extraction out of definite and indefinite DPs, see Manzini (1992a).

<sup>7</sup> Notice that this analysis allows us to capture the (partial) similarities exhibited by *pu* and nominalized clauses in terms of distribution, as in the following example:

- a.    *me stenohori pulto oti efije.*  
       me-make sorry-3s that/the that left-3s  
       "The fact that he left makes me sorry."

Of course it is not always the case that wherever we have a *pu*-clause we can also have a nominalised clause. Any differences in their distribution are to be attributed to independent factors of Case assignment, if the discussion above in the text is correct.

the spec of CP from projecting; so unless and until an answer can be provided to this question, this kind of analysis remains in a way stipulatory in nature.

### 4.3 *Pu*-complements and the tensed-wh-island analysis

The alternative approach, as already mentioned at the beginning of this section, is to assume that *pu*-complements are analogous to a (tensed)-wh-island. Before we proceed to this analysis let us consider first the one proposed by Cinque (1991a) with respect to complements of factive verbs. Cinque (op. cit) argues that factive islands along with wh-constructions constitute weak islands, since, at least in English (and in Italian), they only block adjunct extraction. In order to account for these facts he assumes that sentential complements of factive verbs are theta-marked, given that they are (s-)selected by the verb, but not L-marked. In turn they are not L-marked because although they are internal arguments of the verb, they are not dominated by V'. Thus they are barriers, according to Chomsky's (1986a) definition of barrier. Notice however, that this account, apart from being a stipulation (cf. also Hegarty (1991) for some arguments against Cinque's analysis), does not seem to be right with respect to the MG data, given that in these constructions the extraction of both arguments and adjuncts is blocked. In other words we have not a weak but a strong island. The only way to make this approach work is to assume that *pu*-clauses are in fact adjuncts. However, in this case we would miss an important point: *pu*-clauses are selected as complements of some particular classes of verbs, like factives and psych-verbs. Thus they will have to be s-selected and therefore they cannot be considered adjunct clauses.

Consider now the possibility that *pu*-complements have a structure that resembles wh-islands. Let us look at the following examples of wh-islands in English:

- (18) a. \* how do you wonder what to fix?  
b. what do you wonder how to fix?

In (18a) adjunct extraction is blocked because the Spec of the embedded CP is already filled by another wh-prase. In (18b) on the other hand, when an argument is extracted the result is grammatical. Notice that arguments differ from adjuncts in that the former are theta-marked (or in Rizzi's (1990) terms they carry referential indices) while the latter are not. Hence, adjunct movement is subject to the ECP, while argument movement is subject to

Subjacency. According to Chomsky (1986a) an ECP violation arises if one barrier is crossed, while Subjacency is violated when two or more barriers are crossed. Thus if we follow the Barriers approach (Chomsky, 1986a) we will have to assume an essential disjunction between the ECP and Subjacency. Consider now the case where we have a *wh*-island but the embedded clause is [+Tense] rather than [-Tense] as in (18). The pattern in this case is quite different, since extraction of arguments is also problematic:

- (19) a. ?\* what did they wonder whether he fixed *t* ?  
 b. \* who did they wonder whether *t* fixed it ?  
 c. \* how did they wonder whether he fixed it *t* ?

In (19b) we have an ECP violation because the subject trace is ungoverned: *whether* is not a proper governor (cf. Rizzi (1990) for an explanation of the *that-t* effects). The problem is (19a), where it is clear that the presence of a tensed *I* in the embedded clause affects the grammaticality of the construction<sup>8</sup>.

Let us now consider the relevant structures in MG:

- (20) a. \* pos anarotiese ti na ftiaksis *t* ?  
 how wonder-2s what prt fix-2s  
 \* "How do you wonder what to fix?"  
 b. ti anarotiese pos na ftiaksis *t* ?  
 what wonder-2s how prt fix-2s  
 "What do you wonder how to fix?"  
 (21) a. \* pos anarotiese ti eftiakse *t* ?  
 how wonder-2s what fixed-3s  
 \* "How do you wonder what he fixed?"  
 b. \* ti anarotiese pos eftiakse *t* ?  
 what wonder-2s how fixed-3s  
 \* "What do you wonder how he fixed?"

What the above examples indicate is that the MG data pattern with their English counterparts. In (20) it is only the extraction of adjuncts that yields an ungrammatical result. Notice that in the English counterparts of (20) we have an infinitival clause, while in the Greek examples we have subjunctive which is in general assumed to be [-Tense]. In those cases where a *wh*-operator in the

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<sup>8</sup> Chomsky (1986a) assumes that in this case the most embedded IP constitutes a barrier (a weak one) to *wh*-movement. However, this is a stipulation rather than an explanation.

spec of CP cooccurs with indicative, i.e with [+Tense], in the embedded clause, as in (19) and (21), extraction of both adjuncts and arguments gives rise to ungrammaticality. What this seems to indicate is that there is some kind of conspiracy between the presence of a *wh*-phrase and of a tensed I in the embedded clause that blocks the extraction of arguments as well as of adjuncts.

Having provided a preliminary account of the *wh*-island constructions in MG, let us see how this can be relevant to the case of *pu*-complements. Consider the following examples:

- (22) a. \* *pote metanioses pu ton sinandises t* ?  
 when regretted-2s that him-met-2s  
 \* "When did you regret that you met him?"  
 b. \* *ti metanioses pu aghorases t* ?  
 what regretted-2s that bought-2s  
 "What did you regret that you bought?"

In the explanation for the ungrammaticality of the above examples two factors seem to play an important role: (a) that in (22) the complementizer is *pu*, and (b) that we have a tensed clause. At this point we have to notice that *pu*-complements always display indicative, hence they are always characterised as [+Tense]. Given that *pu* is under C, if something fills the spec of CP, movement will be blocked exactly as in the case of a (tensed)-*wh*-island. Since there is no overt element we must assume that a null operator is involved. So both (tensed)-*wh*-islands and *pu*-constructions would involve an operator in the [Spec, CP] and that would account for the similarities they display with respect to *wh*-movement. The idea of having a null operator in the spec position of CP with *pu*-clauses is not as strange as it may seem<sup>9</sup>. Recall (cf. section 2) that *pu* is also used in the case of relative clauses, clefts and exclamatives; all of these are constructions that involve a null operator in [spec,CP]. On the basis of this we could say that a CP headed by this particular complementizer needs some sort of an (null) operator in its Spec position.

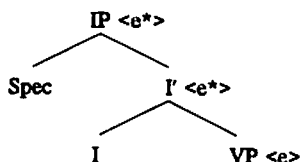
Let us now examine the nature of this operator in factive complements. The standard assumption (Chomsky's (1986b) Principle of Full Interpretation) is that operators need to bind a variable. The question that needs to concern us here is the following: if in *pu*-complements there is an operator, what is the

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<sup>9</sup> Pollock (1992) also proposes that in French yes/no questions there is an empty operator in the spec of CP.

variable that it binds? Recall that *pu*-complements denote individual events. The implication of this is that we expect the event position (in the sense of Higginbotham 1985) of the factive complement to be discharged within the complement. On the other hand, in a non-factive complement, where we have a set of events and not an individual event, the event position will be left undischarged at the level of the CP-complement. In other words, factive complements will have a closed event position at the CP level, whereas non-factives will have an open event position at the same level. As far as factive complements are concerned the question is how exactly the event position is discharged. According to Hegarty (1991) there are two possibilities: it could be discharged either by INFL, or by the Complementizer. A crucial point here is the difference in interpretation we may get in these two cases. Let us first assume that the event position is discharged at the point where VP meets INFL, as an instance of theta-binding. The relevant structure is the one in (23) below (the asterisk indicates that the event role has been saturated):

(23)



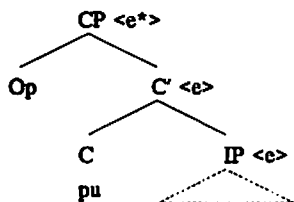
Higginbotham (1985) argues that in this case we have an interpretation where the event position of V is existentially bound by I. In fact this is the interpretation we want for matrix clauses. But if the event position is discharged at the IP level the spec of CP remains available for extraction, which is an undesirable result considering the ungrammaticality of the example below:

(24) \* when did they forget that he left?

Consider now the case where the event role is discharged at the CP level. In order to do so we need to postulate as in Melvold (1986) that theta-binding in this case is due to the presence of an empty operator in the Spec of CP. In this case the presence of the operator will block extraction of the adjunct in (24), whence its ungrammaticality. Theta-binding of this sort resembles theta-binding within NPs. In particular, with respect to NPs the assumption is that

an NP, such as "dog" has an open position so that it denotes a set of dogs (Higginbotham, 1985). The role of the definite Determiner in this case is to close that position and therefore to give a definite interpretation, i.e. "the dog". Let us now return to the case of factive complements. The presence of an empty operator in the spec of CP is required to close the open position of the factive complement through binding of the event position of the verb (cf. (25) below). If so, the empty operator will resemble D in NPs and we expect that it will yield a definite interpretation, as is the case with NPs<sup>10</sup>.

(25)



However, we are left with an apparent problem at this point: namely, if the null operator is responsible for the definite interpretation in factive complements, why is *pu*, which is specified as [+definite], required? The current assumption is that *wh*-(or-focus-)phrases are operators and need to be in agreement with a head of the same features, that is [+*wh*] and [+*f*] respectively (cf. among others Rizzi (1991) for the definition of the *wh*-criterion, Brody (1990) and Tsimpli (1992) for the focus-criterion). The implications of this analysis are clear for factive complements introduced by *pu* in MG. On the basis that the null operator is responsible for the definite event reading and that *pu* has the feature [+def], the required spec-head agreement between the operator and the head under C is derived. In other

<sup>10</sup>As has been pointed out to me (Hans van de Koot, p.c.) under this assumption we derive an asymmetry between factive complements with *pu* and definite DPs. In the first case there is an operator in the [spec,CP] responsible for the definite interpretation, while in the latter case there is no such operator involved; instead the definite interpretation is attributed to the presence of D. Notice however that if we want to obtain a symmetry, then we have to make a stipulation at some point: either that in definite DPs there is an operator licensed by D in the [spec,DP], or that *pu*-complements lack a [spec,CP], a possibility that was excluded on conceptual grounds in section 4.2. Both explanations appear to be circular, so the problem will have to remain open.

words the significance of the null operator is twofold: first it binds the event position of the verb in the embedded CP deriving the individual event interpretation, and secondly it satisfies spec-head agreement. The crucial point here is that it is C (*pu*) which is selected, hence it is *pu* that triggers the presence of an agreeing [Spec, CP], whence the specific event interpretation. Notice at this point the congruence of the hypothesis we advance here with the appearance of *pu* in individual variable/weakest crossover contexts. As was mentioned in section 2, *pu* is also used to introduce relative clauses, clefts and exclamatives. Recall that these constructions involve an empty operator in the [Spec, CP] position. Recall also that according to Lasnik & Stowell (1991) these are the contexts that display weakest crossover due to the intrinsic nature of the empty operator: it binds an individual variable. The operator in factive complements on the other hand, binds the event position of the verb yielding the individual interpretation. The consequence is that the complementizer *pu* will always be in agreement with an (null) operator in its Spec position which binds an individual variable, therefore triggering Spec-head agreement.

The proposed analysis of *pu*-complements actually succeeds in putting together two different approaches: the one where they resemble complex NPs and the one where they resemble (tensed)-wh-islands. In particular *pu*-clauses behave like complex noun-phrases by virtue of the presence of *pu* which is [+def] and resembles a Determiner, and they also behave like wh-islands, on the basis that they involve an operator in the spec of CP. The presence of the operator allows us to provide an account of the impossibility of wh-movement in this case. If this analysis is correct, we can also provide an answer to the question why *pu*-clauses do not allow for an overt determiner to precede them, contrary to *oti*-clauses. One way of answering that question would be by stipulating that *pu*-clauses are strictly s-selected by a certain class of verbs, e.g. factives. A more elaborated answer could be based on the claim that *pu*-clauses resemble DPs: that is in both cases we have (or can have) a definite interpretation. Following Higginbotham (1985) we assumed that the role of definite D in NPs is to bind the open position of N and derive a definite description. Along these lines we also assumed that the presence of an empty operator in *pu*-complements is ultimately responsible for the definite event interpretation. What this implies is that a DP projection can not be present because the event role that would have been bound by D has already been bound by the empty operator.

In summary, in this section I have argued that factive complements involve an empty operator in the Spec, CP. The postulation of an empty operator can account for the impossibility of extracting adjuncts, as in factive *oti* and *that*-clauses (cf. section 3.1). The problem with this proposal is that it

does not explain sufficiently why arguments cannot be extracted out of *pu*-clauses, given that arguments are theta-marked and are subject to Subjacency and not to the ECP. It seems that in order to account for that we must appeal to a conspiracy of C with the operator that binds the event position, in a way similar to that of tensed-wh-islands where there is conspiracy between the wh-operator and [+Tense]. This topic will be discussed in the following section.

### 5 *Pu*-complements and factive complements in English: a new perspective

Having provided an account of the extraction data in the case of *pu*-complements, I will try to examine whether this explanation can work for the English data as well. As was already mentioned the presence of an empty operator in the spec of CP explains why wh-movement of adjuncts will be blocked: this position is no longer available as an escape hatch, and therefore an ECP (Minimality) violation will occur. Let us now look at the English data with factives. The facts are that while extraction of adjuncts is always blocked, extraction of arguments is possible:

- (26) a. who did they forget that she met t?  
 b. (?) who did they forget t met him?

In (26b) *that*-deletion is obligatory in order to avoid an ECP (head-government) violation. The problem is, as Hegarty (1991) notes, that the postulation of an empty operator in the Spec of CP should also influence argument extraction, as is the case with (tensed)-wh-islands. Recall at this point that, as was discussed in section 3.1, in MG there are some cases where a "factive" verb like "thimame" (=remember) may take a complement introduced either by *pu* or by *oti*. Recall also that in the case of *oti*-complements with factive verbs adjunct extraction is blocked while argument extraction is allowed (cf. (27a-b) below), just like in English.

- (27) a. (?) *pjon thimase oti sinandise i Maria?*  
 whom remember-2s that met-3s the Mary  
 "Who do you remember that Mary met?"  
 b. \* *pote thimase oti sinandise i Maria ton Petro?*  
 when remember-2s that met-3s the Mary the Peter  
 \* "When do you remember that Mary met Peter?"

How are we going to explain the data in (26)-(27) above? The postulation of an operator in the spec of CP is motivated by the semantics of factive complements, namely their individual event reading. Let us follow the theory of movement and locality in Manzini (1992a&b) that unifies the ECP and Subjacency, and assumes adjuncts and arguments to fall under the same principle of locality. Manzini introduces the distinction between categorial indices and addresses, as in (28) below:

- (28) a.  $\alpha$  has a categorial index if  $\alpha$  is lexical  
 b.  $\alpha$  has an address if there is a  $\beta$  that  $\alpha$  is a visible argument of.

According to (28) arguments will be assigned a categorial index; they will also be addressed because they are (visible) arguments of V or I. Adjuncts on the other hand cannot be addressed but will only bear a categorial index. A'-dependencies formed by arguments can then be based either on categorial indices or on addresses, while A'-dependencies formed by adjuncts will be categorial index sequences only. The notion of dependency or sequence is defined as in (29):

- (29)  $(\alpha_1, \dots, \alpha_n)$  is a sequence iff  
 for all  $i$ ,  $\alpha_i$  is coindexed with and c-commands  $\alpha_{i+1}$

The principle of Locality (Manzini, 1992b) that unifies ECP and Subjacency is defined as in (30):

- (30) *Locality*  
 $\alpha$  is a dependent element iff  
 there is an antecedent  $\beta$  for  $\alpha$   
 and  $\alpha$  sequence  $(\beta, \dots, \alpha)$  that satisfies government.

What (28)-(30) amount to is that when arguments form A'-dependencies they have two extraction tracks available. They can form an address-based sequence. Intuitively we understand this as a "head to head" movement in the sense that we need to check all the heads in the sequence from the head that Case-marks the argument (its head-governor) upwards. The basic consequence of this is that when we come across a head that has its own address we must either create a sequence with incompatible addresses or violate Locality, forcing ungrammaticality in either case. In other words a head that is addressed creates an island in that it cannot let other addresses pass through. The other option available to arguments is to form categorial index-

dependencies. Intuitively this amounts to the "Spec-to-Spec" strategy. It follows from the theory that arguments will switch to that option in case they meet heads that have their own addresses. A'-dependencies of adjuncts will be restricted to the "Spec-to-Spec" track, since they are not Case-marked and consequently not addressed.

The crucial assumption here is that heads with denotational properties, such as a definite D or a tensed I, have their own addresses (cf. Manzini (1992a) for the argumentation). Let us now look at the proposed analysis of *pu*-complements from a Locality perspective. Recall that *pu* is specified for the [+def] feature and in that sense it resembles the definite Determiner. (Note here that the empty operator plays the logical role of D). The implication is that by virtue of the [+def] feature, it will also have its own address. The consequences for wh-movement out of a factive complement become now evident. Consider arguments: when an argument moves, it will form an address-based sequence. However, it will not be able to transmit its address through C, because the C-position in this case is filled by *pu*, which has its own address. Notice however, that the extracted argument has another track to follow: that is it can move "Spec-to-Spec". The problem here is that the spec of CP is filled by the null operator, so both extraction tracks will be blocked, hence any attempt to move the argument to the Spec of the matrix CP will lead to ungrammaticality, as desired. Consider next adjuncts: these will only be able to move "Spec-to-Spec". However, the Spec of CP is filled by the null operator and therefore movement is blocked. The advantages of this analysis should be evident. First of all it exploits fully the idiosyncratic properties of the complementizer *pu* as far as movement is concerned. Secondly, it provides us with an explanation for the English factive complements and the *oti*-complements of factive verbs in MG.

Let us indeed look at the English data (and the MG data with *oti*-clauses as well) within the Locality framework. The ungrammaticality that adjunct extraction yields is obviously derived: it is due to the presence of the null operator in the Spec of CP. In other words a categorial index sequence will be blocked when it gets to the Spec position of the embedded CP, since the Spec is already filled by the null operator. What about arguments? The formation of a categorial index dependency is blocked for the same reason. However, arguments can form address-based sequences as well. Their address will percolate upwards from head-to-head. What will happen when we get to the C head? In this case the complementizer is *that*, or *oti* for the MG data. Recall that these complementizers are not specified for the [+def] feature. This implies that they do not have their own address. What follows from this is that the address of the moved argument can pass through C. Hence arguments can

be extracted out of factive complements in English by forming address-based sequences.

As a final point before leaving this section, I would like to mention that in Serbo-Croatian extraction of arguments and adjuncts is also excluded in the case of factive complements introduced by the complementizer *sto*. Consider the following examples<sup>11</sup>:

- (31) a. \* *sta si zalio sto si kupio t ?*  
           what aux-2s regret that aux-2s buy  
           'What did you regret that you bought?'  
       b. \* *kada si zalio sto si sreo Mariju t ?*  
           when aux-2s regret that aux-2s meet Mary  
           \* 'When did you regret that you met Mary?'

It seems that Serbo-Croatian patterns with MG as far as extraction out of factive complements is concerned. On the basis that the complementizer *sto*, just like *pu*, is specified for the [+definite] feature (as opposed to the non-factive complementizer *da*, cf. section 3.2) we expect it to be addressed, hence to create a barrier to address-based dependencies. Additionally, on the basis that in (31a-b) we have a factive complement, we expect that the presence of an empty operator in the Spec, CP will also block movement under the Spec-to-Spec track, hence the ungrammaticality of the above examples.

At this point we are left with various problems. First, in the previous section we argued that the null operator in the [spec, CP] and the complementizer *pu* enter a Spec-head agreement configuration with respect to the definite feature. Notice however that, as was already mentioned, *that* and *oti* do not possess that feature. The question is the following: is the Spec-head agreement requirement violated in this case? In order to overcome this problem, we could assume, as in Melvold (1986), that in these cases the null operator that binds the event position of the complement clause is generated in the Spec of CP only at the LF level. Its presence at this level is required to give us the interpretation of an individual event which is dictated by the semantics of factive verbs. We can then overcome the problem of Spec-head agreement, on the assumption that the agreement requirement is not relevant at LF, but is a morphological requirement active only at S-structure/PF in the spirit of Brody (1991), Chomsky (1992).

Another problem, perhaps just a technical one, is how *pu* is addressed, given that the typical mechanism for visibility and hence addressing is Case-

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<sup>11</sup> I am grateful to Vlad Žegarac for providing me with these data.

marking and that *pu*-complements have been argued to be Case-resistant in the sense of Stowell (1981). Manzini (1992a), following Baker (1988), proposes that incorporation can be used as an alternative mechanism for Visibility. If so, (abstract) incorporation of I into C can justify the addressing of *pu* (Manzini, p.c)<sup>12</sup>.

## 6 Conclusion

To conclude, in the present paper I have attempted to provide an account of the extraction phenomena with respect to factive complements in MG and English. In particular I have argued that factive complements in MG are introduced by the complementizer *pu*. The main property of *pu*-complements is that they block extraction of both arguments and adjuncts. The two crucial points are: (a) that the complementizer under discussion is characterised as [+definite] and (b) that factive complements involve an empty operator in the Spec, CP. The presence of the operator accounts for the impossibility of adjunct movement in factive complements introduced by *pu* (and *oti* in some cases) in MG and *that* in English. Following the theory of Locality (Manzini, 1992a) I claimed that *pu* has its own address by virtue of the [+def] feature and for this reason the moved argument will not be able to pass its own address through C, without violating Locality. On the other hand, it cannot move to the [Spec, CP] because this position is occupied by the empty operator, hence the ungrammaticality.

However, in the English factive *that*-clauses arguments can follow the "head-to-head" strategy, given that C (i.e. *that*) is not addressed. In other words, the differences between the MG and the English data regarding factive complements follow from the idiosyncratic properties of the complementizer selected in each case.

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<sup>12</sup> Our account of *oti* and English factives implicitly denies that [+Tense] by itself can conspire with a filled Spec, CP to create a strong island. Thus, the analysis of tensed-wh-islands in Manzini (1992a), no longer goes through. Vice versa in Manzini (op. cit.) an analysis for *pu* factives and tensed-wh-islands is available in terms of an operator/Tense conspiracy, but no explanation for the lack of conspiracy in (tensed) English factives is provided. Thus a new analysis of Tense islands (perhaps a refinement of Manzini's approach) appears to be needed in any case.

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