



Parameters and Functional Projection

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Parameters and Functional Projection*

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0. Introduction

In this paper I discuss some data from Irish within a framework of functional categories adapted from that of Fukui & Speas (1986). The analysis developed here makes fairly strong predictions about the phrase structure of functional categories. I propose a theory of functional categories which states that whether the functional category projects to the level of X' or X'' in any language is directly related to the head-initial/head-final parameter and the directionality of case assignment in that language.

The data are drawn primarily from McCloskey (1985) and Chung & McCloskey (1987). I claim that Irish, and other VSO languages, have at least some functional categories which project only to the X' level, rather than to the X'' level. In particular I claim that in these languages INFL projects only to the level of I', and that this fact is closely related to the directionality of case assignment

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in VSO languages. Furthermore in verb-initial languages the subject remains within V' at S-structure, and this fact is crucial for the behaviour of subjects with respect to NP-Movement.

1 Some analyses of Irish Word Order


Irish exhibits VSO word order in finite clauses and either SVO or SOV order in nonfinite clauses, depending on the dialect. For the purposes of this discussion I will assume, following McCloskey (1985), Chung & McCloskey (1987), and Sproat (1984), that Irish is SVO at D-structure. Examples of Irish finite and nonfinite clauses are given in (1) and (2):

(1) **Chonaic mé an bhean**
 see(PAST) I the woman
I saw the woman

(2) **Ba mhaith liom [iad Ciarán a fhustú]**
 I-would like them hire (-fin)
I would like them to hire Ciaran

Within the Government Binding Framework of Chomsky (1981) all sentences have a VP at D-structure. Emonds (1980), Koopman (1983) and Sproat (1984) argue that VSO languages are SVO at D-Structure, and have a V-movement rule which operates at S-structure. This V-movement rule moves V first to INFL and then to COMP. This is illustrated in (3) for the sentence given in (1):

(3) [CP [SPEC] [c' [COMP [v+1 Chonaic] [IP [NP mé] [I' [INFL t_i][VP [v t_i]
 [NPan bhean]



Verb-initial languages assign case to the right. In order to assign Nominative Case to the subject NP, the verb must move out of the VP and to the left of the subject. Additional support for this view comes from languages like Irish which exhibit VSO word order and Nominative subjects in tensed clauses, and SVO word order and Accusative subjects in nontensed clauses.¹

¹ In some dialects the normal word order of Irish nonfinite clauses is SOV (see Chung & McCloskey 1987); however, as only objects can appear before the verb (and not prepositions or adverbs), and as the progressive construction shows

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Fukui & Speas (1986) (hereafter F&S), drawing on work by Abney (1986), make a distinction between lexical and functional categories. Lexical categories are those with intrinsic semantic content (N,P, A and V) while functional categories have less semantic content (INFL, COMP and DET). Central to their claim is the principle of Functional Projection given in (4).

- (4) FUNCTIONAL PROJECTION: A functional projection projects to the X" level iff some Kase feature is discharged to its Spec position. Otherwise, it projects only to X'. (F&S:26)

To see how the Principle of Functional Projection works, the tree structures for the English sentence *John sees Mary* (5) and for the DP *John's hat* are given in (5) and (6). In each case the subject has been raised to the SPEC position of a functional category (I" and D" respectively) because the functional categories INFL and DET have F-features to discharge to their SPEC positions, and the subject DP must move to receive them. It should be noted that, under this analysis, English IPs and DPs have very similar structures.

- (5) [IP [SPEC John_i] [I' [INFL] [V' [DP t_i] [v' [v sees] [DP Mary]]]]]

- (6) [DP [SPEC John_i] [DP [D 's] [N' [DP t_i] [N hat]]]]

If we translate the GB approach to VSO languages into the theory of functional categories put forward by F&S, the Irish sentence given in (1) would look like the structure in (8), and the Irish DP given in (7) would have the structure shown in (9).

- (7) *hata an fhir*
hat the man
the man's hat

- (8) [c' [COMP [v+1 Chonaic_i]] [IP [SPEC [DP mé_j]] [I' [INFL t_i] [v' [DP t_j] [v t_i] [D' an bhean]]]]]

- (9) [DP [N' hata_i] [DP [SPEC [DP an fhir_j]] [D' [D+Gen t_i] [N' [D t_j] [N t_i]]]]]

the order VNP, I will make the simplifying assumption that the basic order is SVO.

2 Some Problems with the Approach

Since INFL is base generated to the left of the subject, and thus is free to assign Nominative case, it is not clear why the subject DP has to move at all. The verb moves to INFL, and then to COMP to assign case, and the subject DP moves to the SPEC of IP to receive case. If the subject raises, the INFL+V must move to COMP. If the INFL+V moves to COMP, the subject must raise to SPEC of IP; but how can we force either movement, given that the D-structure configuration is the appropriate one for case-assignment?

F&S claim that COMP, like the other functional categories, projects to X" when an F-feature is discharged. If this were to happen in Irish when INFL+V moved to COMP, an empty SPEC would receive the feature (Nominative Case), and the subject would not be case-marked. To avoid this we would be forced to modify the principle of Functional Projection so that only a Functional Category's own F-features could force it to project to X".²

Finally, one of the attractions of F&S's account for English is that under their analysis IP and DP have similar structures - a result that seems perfectly natural in that in each instance a case feature (Nominative and Genitive respectively) is discharged to a subject DP. However for Irish we cannot assume a completely parallel analysis for IP and DP, because there is no equivalent to COMP above DP. To produce the correct word order for Irish DPs, the head of DP must raise out of DP to assign Genitive case to its SPEC position, and so we would have to assume the adjunction structure given in (9).³

F&S mention that not all languages with functional categories will have all of them. So in principle a language could have IP and DP but lack CP. I would like to explore a different possibility here: that not all functional categories must project to the level of X", and that if we allow some languages to project only to X' we can capture the relationship that holds between the Case features discharged by the functional category and the SPEC position which must be present to

² I am grateful to J. DuPlessis who pointed this out to me.

³ In fact there is another possibility: that DPs are dominated by KP (Case Phrase), another functional category equivalent to CP. This proposal is put forward by Lamontagne & Travis (1986). I will not discuss this possibility further here because I will make an alternative proposal below, which will avoid the other problems under discussion.

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receive them. In effect I will claim that whether or not the functional category has a Spec position is related to the setting of the head-initial/head-final parameter in the language, and the directionality of case assignment.

3. An Alternative Analysis of VSO Languages

The proposal I am making here is that in VSO languages like Irish INFL projects only to the level of I' and not I". The head of the lexical complement must move into INFL (Sproat, 1984) in order to assign Case to the subject, and the subject remains within V' at S-structure. A similar proposal is made for genitive DPs, so that the sentence in (1) and the genitive DP in (7) would have the structures given in (10) and (11).

(10) [IP [INFL Chonaic /] [vp [DP mé] [v' [v t /] [DP [an bhean]]]]]

(11) [DP [D+Gen [N hata /] [N' [D' an fhir] [N t /]]]]

The subject remains within the complement of the lexical category in both finite and nonfinite clauses. I' and D' have parallel structures within this analysis, in each case the head of the lexical category moves into the head of the Functional Category in order that Case can be assigned to the subject.⁴ The analysis of VSO languages then can be summarized as in (12):

- (12) In VSO languages:
1. I and D project only to the X' level
 2. Case is assigned to the right
 3. The subject remains within V' at S-structure
 4. V raises to INFL

Central to the proposal here is the principle of functional projection that I assume:

⁴ This analysis of Irish DPs is almost identical to the analysis of Construct State Noun Phrases in Modern Hebrew presented in Ritter (1987). Interestingly, Hebrew used to be a VSO language, but now shows SVO surface word order. As Modern Hebrew DPS and IPs do not have a parallel structure, it would appear that the principle of Functional Projection given in (15) may be too strong. I will set this question aside for further research.

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- (13) Functional Projection: Functional Categories project to X" if their complement is on the right and they discharge Case to the left or vice versa, otherwise they project to X'.

It should be noted that whether the Functional Category projects to the level of X' or X" can be derived from two independent parameters, that of the head-initial/head-final parameter, and the directionality of Case assignment. In effect, English Functional Categories have SPEC positions because they take a complement on the right but assign Case to the left. Irish Functional Categories take a complement on the right and assign Case to the right, so they never have SPEC positions. In this way we can derive the difference between languages like English and languages like Irish with respect to two independent parameters. As we shall see below, the analysis predicts that there will be differences between Irish and English with respect to the type of DPs that may occupy the subject position. As all subjects remain within V' in Irish, they must always receive a θ -role. In English, on the other hand, there is an A' position (SPEC of IP) available which may be occupied by a non-thematic subject.

4. Non-thematic NPs in Irish

4.0 Introduction

I claimed above that Irish subjects remain within the verb phrase at S-structure. This claim together with the assumption that all NP positions within the projection of the Verb are θ -marked, leads us to the prediction that there are no non-thematic subjects in Irish.

In the following sections I examine some data from Irish that bear on this prediction. First I look at possible cases of NP-movement, the Raising and Passive structures discussed in McCloskey (1984, 1985) and in Chung & McCloskey (1987). Then I go on to discuss some other structures (weather verbs, psych verbs and extraposed subjects) which might be taken as evidence against the position that all NPs in Irish bear θ -roles. In each case I will argue that the subject is assigned a θ -role, and so supports the claim that Irish subjects remain within V' at S-Structure.

4.1 Raising

Within Government-Binding theory the only possible target for NP-movement is a non-thematic subject position, that is SPEC of

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IP. If there is no SPEC of IP then NP-movement would not be possible because there would be no non-thematic position to receive the moved element. In other words, in languages where INFL lacks a SPEC position we would not expect to find either Raising or Syntactic Passives. McCloskey (1984,1985) presents evidence that Irish has both Raising to Subject and Raising to Prepositional Object, also called 'Quirky Raising' (McCloskey, 1985). An example of Quirky Raising is given in (14).

- (14) **Is féidir do Sean /[t / a bheith breoite]**
 Neg possible to John be (-FIN) ill
John can't be ill

In (14) the noun Sean has raised from the subject position of the embedded clause into the position of prepositional object in the matrix clause. The verbs discussed by McCloskey are all modal verbs like b'fheidir 'can', and b'eigin 'must'. In Guilfoyle (1986) I argued that the 'Quirky Raising' structures are monoclausal, and do not involve NP-movement at all. I claimed that in sentences like the one in (14) the modal is base generated in INFL and assigns a Quirky Case to the subject rather than the usual Nominative Case.⁵ Under my analysis, then, example (14) has the monoclausal structure shown in (15), and Sean is the D-structure and S-structure subject of a bheith breoite 'to be sick'

- (15) **[[Is féidir] do Sean [v' a bheith breoite]]**

It is not possible to go into the details of the analysis here but in essence I claim that these structures have the following properties.

1. They are monoclausal
2. The Modal verbs are base generated in INFL
3. These verbs select a Quirky Case-marked subject

⁵ Stowell (1986) also argues against McCloskey's analysis, claiming that these structures are Quirky Case-marked NPs which have been raised to subject position rather than to prepositional object position. Constraints of space do not permit me to discuss the various claims of McCloskey (1984), Stowell (1986) and Guilfoyle (1986), though many of the issues raised in these papers are of relevance to the topic under discussion. They will be discussed in detail in Guilfoyle (in preparation).

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This analysis could be extended to the Raising to Subject structures discussed in McCloskey (1985). An example is given in (16) below:

- (16) **Caithfidh sí a bheith breoite**
 must she be(-fin) ill
She must be ill

Under the analysis proposed here this is not a raising structure but a monoclausal one, where the modal verb is again base generated in INFL.

- (17) **[[₁Caithfidh] sí [ν a bheith breoite]]**

Caithfidh *must* is base generated in INFL and selects a Quirky Case-marked subject. Some complications arise when we consider the data in (18) where the subject bears Accusative Case rather than the usual Nominative Case.

- (18) **Caithfidh í a bheith breoite**
 must her be(-fin) ill
It must be that she is ill

According to McCloskey (1985), examples like (18) are possible because subjects of Irish nonfinite clauses can receive a default Accusative Case, with the result that Raising is optional. In (18) the subject of the embedded clause has not moved to the subject position in the matrix clause; therefore, the pronoun bears Accusative Case. Under the analysis here, (18) is monoclausal and the modal can assign a Quirky Case to its subject, similar to that in example (15). However, in the case of Caithfidh either Nominative Case or Quirky Case may be assigned.

Some support for the analysis presented here is provided by the examples in (19).

- (19) a. ***Ní féidir dó [í a bheith breoite]**
 Neg possible to-it her be (-FIN) ill
She can't be ill

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- b. ***Caithfidh sé [i a bheith breoite**
Must it her be(-fin) ill
It must be that she is ill

Under a monoclausal analysis these sentences are ruled out because there is only one subject position and these sentences have two subjects. Under the optional raising analysis this sentence should be good since Irish pleonastic subjects are generally overt when they are linked to a lower clause.

4.2 Passive

4.2.1 Perfective Passive

The Irish perfective passive, is like the English passive in that it shows the usual reversal of the order of the agent and theme in the sentence, and there is special morphology on the verb which does not Case-mark its object. The agent appears inside a PP (or is inherently Case-marked, depending on the analysis).

- (20) a. **Tá teach nua ceannaithe againn**
 is house new bought at-him
A new house has been bought by him

However, there are some ways in which the Irish Perfective Passive is quite different from the English Passive. There is no active form of the sentences in (20); to express Perfective Aspect only this form is available. To date I do not have strong evidence for choosing a lexical analysis of this structure rather than a syntactic one, but there is some indication that the construction is formed by a lexical process; this evidence comes from the meaning of the structure, which is primarily stative (Greene, 1979). In Irish English the stative force of the structure has been borrowed so that there are doublets like *He has learned his lessons* (he may or not know them), *He has his lessons learned* (he knows them).

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4.2.2 Impersonal Passive

The Irish impersonal passive is not really a passive construction at all, but can more accurately be described as an 'autonomous form'; which is the term used in traditional grammars of Irish. An example is given in (21):

- (21) a. **Marbhadh (*sé) iad ar an bhóthair aréir**
 died them on the road last night
 They were killed on the road last night
- b. **Marbhadh ar an bhóthair aréir iad**
 died on the road last night them
 They were killed on the road last night

The NP following the verb in these examples is not a subject, but an object. Clear evidence for this claim is provided by examples like (21b), in which the pronominal object has moved to the end of the sentence, a process that subjects cannot undergo (Chung & McCloskey 1987). Under the analysis here, the verb assigns the θ -role 'unspecified agent' to the subject position, which is occupied by *pro*.

4.3 Weather Verbs

As mentioned above Irish is a *pro*-drop language yet Irish weather verbs must have a lexical subject, the third person pronoun *sé* 'it'. In this respect they are like English weather verbs.

- (22) a. **chuir *(sé) baiste** b. **Tá *(sé) go brea inniu**
 put it rain is it fine today
 It rained *It's fine today*

In Irish *pro* may appear in subject position only when the verb bears agreement morphology, and weather verbs do not show agreement. Under the analysis here *sé*, like English *it*, bears a θ -role, that of quasi-argument (Chomsky, 1981).

4.4 Psych Verbs

McCloskey (1984) discusses a class of Irish verbs which do not have lexical subjects and whose single argument appears as an inherently Case-marked NP (or PP, depending on the analysis) following the Verb. These verbs generally indicate a change of state,

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and the θ -role associated is that of 'experiencer'. An example is given in (23):

- (23) **Mheadaigh ar an ghaoth**
 increased on the wind
The wind increased

Assuming that the argument is a Case-marked NP, we must then decide whether it occupies subject or object position, a question that is not clear given the surface VSO word order of Irish.

McCloskey (1984) claims that these verbs are parallel to the Italian unaccusative verbs, in that the verb does not assign a θ -role to its subject or Case to its VP-internal argument. The Irish 'unaccusative' objects are not forced to move to subject position because they get Case from a VP internal PP. Under the analysis here the experiencer DPs are in subject position bearing a Quirky Case, like the 'Quirky Raising' verbs. In fact the evidence does not force either analysis. The experiencer argument of Mheadaigh can sometimes bear Nominative Case, as can be seen in (24).

- (24) **Mheadaigh sé**
 increased it(NOM)
It increased

McCloskey (1984) claims that this is because the preposition has been lost through reanalysis, and the verb (like all Unaccusatives) cannot assign Case to its VP-internal argument, which is then forced to move to subject position in search of Case. However, as pointed out in Guilfoyle (1986), it is also possible to claim that the Quirky Case-marker ar is subject to reanalysis, and the subject bears the more usual Nominative Case-marking.

4.5 Extraposition

The last structure that we will consider here is that of Extraposition. Irish shows a variety of possibilities when a sentential subject is extraposed to a clause final position. These are exemplified in (25)

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- (25) a. **Ghollfead sé orm tú imeacht**
 bother (CONDIT) it on-me you leave (-FIN)
It would hurt me for you to leave
- b. **Theip (*sé) orm an scrúdú a fháil**
 failed the exam pass (-FIN)
I failed to pass the exam
- c. **Chlis (sé) uirthi eolas ar bith a bhaint as**
 Fail (it) on-her information any take (-FIN) out-of-him
She failed to get any information out of him

In some cases the extraction site must be filled by a lexical pronoun sé, as in (25a). In other cases sé must not appear, as in (25b). Finally, in (25c) the appearance of sé is optional. I have no explanation for this variation. However under the analysis presented here, I would claim that in all cases the subject position receives a θ -role and is co-indexed with the extraposed clause.

5. Wh-movement

Up to this point I have discussed only IP and DP. However CP is also assumed to be a functional Category by both F&S and Abney (1986). When COMP has Wh-features to discharge, it projects to the level of C", and the Wh-element occupies the SPEC position. A language which does not have Functional Categories which project to the level of X" could not have Wh-movement as there is no SPEC position for the Wh-element to occupy. Therefore if Irish CPs are like IP and DP, we would not expect to find Wh-movement in the language. This does not appear to be the case, as the sentences in (26) show:

- (26) a. **Cé t_j aL tháinig t_j isteach?**
 Who COMP come (PAST) in
Who came in?
- b. **Caidé t_j aL thug tú t_j dó?**
 What COMP give you to-him
What did you give to him? (McCloskey 1979)

McCloskey (1979) discusses data that support a Wh-movement analysis of the structures in (26), and so pose a problem for the

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theory of functional projection in (13). There are a number of points in which COMP differs from the functional categories INFL and DET; these might lead us to expect that COMP might behave differently with respect to its projection properties.

First, the F-feature discharged by COMP is not a Case feature, unlike the F-feature discharged by INFL (Nominative Case) and DET (Genitive Case). This suggests that perhaps CP does not form a natural class with IP and DP. To the extent that Functional Projection is determined by considerations of Case we do not expect that CP should be affected by it.

Second, all languages with Wh-movement move the Wh-element to the left, regardless of whether the language is right- or left-branching, so SPEC of CP will always be to the left of C. Again this suggests that the principle of Functional Projection as advanced here is not applicable to C, as it is unaffected by the head-initial/head-final parameter.

Finally, COMP is the only one of the three functional categories which selects another functional category as its complement; the other two select lexical categories, V' in the case of INFL, and N' in the case of DET. This suggests that COMP is not the same as the other two functional categories.

6. Implications and Conclusions

6.1 Some Broader Implications

I claim that the fact that Irish subjects do not raise at S-structure is not an idiosyncratic fact of Irish, but is the result of the interaction of two parameters: the head initial/head final parameter, and the directionality of government. In languages where the directionality of case assignment and the selection of complements are the same, functional categories project only to the level of X', and the subject will remain within V' at S-structure. In languages where the directionality of case assignment and the selection of complements are different, the functional category must project to X" so that the subject can move into the SPEC position of IP and receive the case features of I'.

6.2 Acquisition

In terms of learnability the principle of FP will predict for any language, whether the functional categories project to X' or X". The child needs no independent evidence to ascertain whether the

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language allows SPEC positions in the functional categories as this will follow automatically from Kase direction and head-initial/head-final parameter. The task of the child is to ascertain whether or not the language assigns Kase and takes complements in the same direction.

6.3 Some Unresolved Questions

The analysis here leaves many issues unexplored. In particular I have not discussed what constitutes a barrier in Irish. Under Fukui & Speas' analysis, a barrier is formed only when a category projects to X". If this were the case, Irish would have no barriers, as all categories project to X' level - a clearly undesirable result. It may be possible to reinterpret this claim in a way that is compatible with the analysis here, by stating that a barrier is formed when an F-feature is discharged, regardless of whether the functional category projects to X' or X".

There is also the problem of languages like Italian, which appear to allow two subject positions, one inside the projection of the Verb and the other in SPEC of IP. This would be unexpected, given the principle of Functional Projection in (16). I leave these and other related questions for further research.

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