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## An Expanded-INFL Syntax for Modern Irish

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### Abstract

A recent proposal (Pollock 1989) within the framework of Government and Binding (GB) grammatical theory has been that the members of INFL - Agreement and Tense - should be given full constituent status as maximal projections in their own right. This idea has been applied to the syntax of Modern Irish in order both to test the universality of the expanded INFL proposal and to investigate what new perspectives it might have to offer on some remaining problems of Irish syntax. The results are presented in the following paper along with discussions of the direction they suggest for further research.

### INTRODUCTION

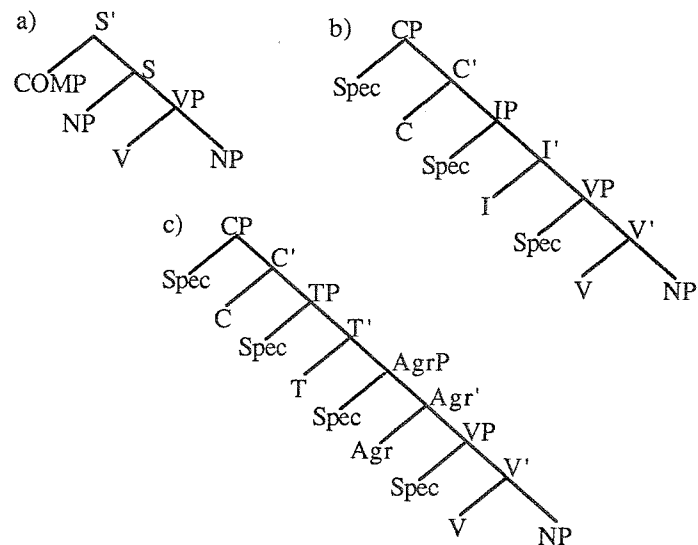
Using data from mostly English and French, J.Y. Pollock argues in a recent proposal (1989) that if the usual members of INFL, Agreement and Tense, are included in the syntax as full maximal projections, many of the phenomena surrounding auxiliaries, negation, and verb movement can receive straightforward explanations. The proposal seems readily adaptable for other SVO languages which are generally accepted as showing evidence of verb movement, notably the so-called Verb Second (V2) languages. In order to test the universality of the expanded-INFL proposal, an expanded-INFL syntax has been applied to the model VSO language Modern Irish. The result has been a quite promising new syntactic structure for Irish which seems to confirm the universality of expanded-INFL.

While it is fully compatible with existing analyses for Irish word order in which VSO is derived from SVO, the new expanded syntax is equally adaptable to an account deriving VSO from SOV. Such an account is suggested by the Irish infinitive clause, which is built around the verbal noun (VN), and which regularly shows surface SOV order. The new syntax provides an attractive solution for the placement of preverbal particles (interrogative, relative, negative, and copula), which are the only elements regularly allowed to precede the verb in Irish. It also suggests some interesting perspectives for the analysis of copula constructions, an area which remains an open question in Irish syntax.

### Expanded-INFL syntax

I would like to begin by defining exactly what is meant here by an expanded-INFL syntax. This is my own terminology for the kind of structure proposed in Pollock 1989. It is probably easiest to see what is new about this structure if we compare it to earlier models of universal syntax.

(1)



Through the years, the 'basic' syntactic tree structure assumed within the GB theoretical framework has steadily grown more complex and abstract. The first tree structure (a) above shows a pre-*Barriers* (Chomsky 1986) type of syntax with really the bare essentials. The  $S$  portion of the tree is the area which undergoes the most change. In the second tree (b), after *Barriers*, we have a new level of constituent structure introduced: INFL (inflection). It corresponds roughly to the  $S$  level of the previous structure. We also see that there is an abstract element  $Agr$  (Agreement) which is assumed to be generated in INFL. The whole tree shows consistent 2-level expansion of X-bar syntax for each phrasal projection. The last tree above (c) is an example of the expanded-INFL syntax: The  $IP$  of (b) has grown into two fully expanded phrasal projections in their own right:  $AgrP$  and  $TP$  (Tense). This of course gives us a lot more 'room' in the syntax to propose analyses for grammatical phenomena involving the abstract (or

overt) elements  $Agr$  and Tense, namely things like the behavior of auxiliaries, subject-verb inversion, negation, quantifiers, and verb movement. As Pollock demonstrates, this kind of structure can be used to explain many of the word order details of the SVO languages French and English — details which otherwise seem unexplainable except by recourse to ad hoc stipulations.

### BASIC IRISH SYNTACTIC STRUCTURE

Can the kind of structure pictured in (1c) say anything new to us about Irish? Can we implement such a structure at all for a VSO language like Irish? The answer depends in part upon how one decides to analyze the surface VSO order of Irish. There are two possible analyses, both represented in the existing literature.

#### VSO is base-generated

Stenson 1981 and Chung 1983 are two studies which represent the view that the VSO order in Irish is base-generated. This implies that the syntactic structure is a flat, one-level tree with all constituent phrases placed as sisters to the initial verb and no verb movement involved. It accurately represents the observed surface word order of Irish and is thus descriptively adequate, but it offers little explanation for the verb-initial order. Chung attempts to give a possible theoretical defense of the flat structure by appealing to the observation that VSO languages seem to lack the subject-object asymmetries with regard to extraction properties that one usually finds in SVO languages. However, this is not quite correct. The subject NP in Irish is much more closely tied to the verb than the object NP. While nothing can ever intervene between the subject and the verb, there are times when the object is in fact forced to move away from its canonical position. This occurs when the object is pronominal. It must appear in absolute final position in its clause, and it apparently reaches this position by means of some sort of a rule of Pronoun Postposing (Chung & McCloskey 1987). These facts suggest that the relationship of the subject and object NP to the verb is not simply one of equal sisterhood.

#### The SVO Analysis

If the VSO order of Irish is not base-generated, then it must arise through some sort of derivational process from a different underlying word order. This view is implicitly supported in an article devoted to establishing the

existence of a VP in Irish (McCloskey 1983). The existence of a VP entails at least two hierarchical levels of sentence structure, with the verb originating in a VO or OV constituent and obligatorily fronted to some other position. Sproat 1985 builds on the work of McCloskey to develop a full SVO Analysis for Welsh, arguing that the same analysis may be applied to Irish. The underlying structure for the two languages is argued to be SVO, and the obligatory fronting of the finite verb is made to follow from the requirements of case theory. Sproat maintains that while INFL in SVO or SOV languages may assign nominative case either to the left or the right, INFL in VSO languages is restricted to assigning case rightward. The verb lexicalizing INFL is thus forced to appear to the left of the subject NP in order to assign nominative case successfully. Sproat's SVO Analysis is a step in the right direction in that it gives a theoretically attractive explanation for the obligatory fronting of the verb, but it is incomplete in that Sproat does not specify any landing site for the conjoined verb and INFL.

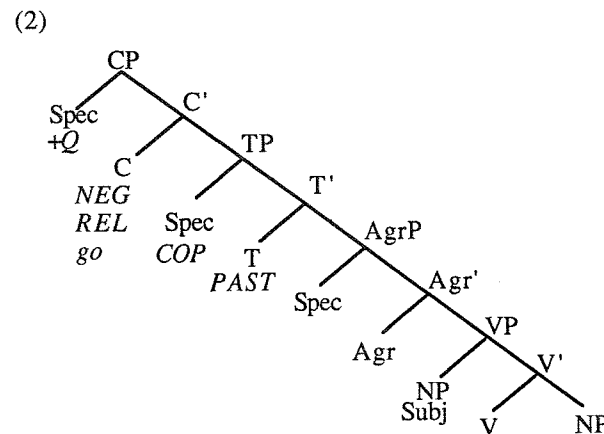
Without going into any more detail, it may be said that the arguments for the SVO Analysis are quite attractive, and the general consensus among Celtic syntacticians seems to be that Irish is SVO underlyingly. In general, a derivational account like this for verb-initial languages is pretty much the norm now, as can be seen in recent works of a typological nature such as Koopman & Sportiche 1988.

### EXPANDED-INFL FOR IRISH

Obviously, it should be possible to adapt the Pollock type of syntax for Irish if we accept that Irish VSO order is derived from SVO. So let us assume that for the moment. Then, of course, there are plenty of language-specific details to work out, and the following sections contain suggestions for handling these. My proposal for the full syntactic structure of Irish is given in (2) and will be referred to throughout the ensuing discussion.

### Principles and parameters according to Pollock

Given in (3) is a very brief summary of the most important points that Pollock argues for in his article. These can be reduced to a pair of universal principles (I and II) and a set of parameters (III) which vary from language to language.



- (3) I. Verb movement (V-move) is a two-step process:
- i. 'short' V-move to Agr
  - ii. [ V + Agr ] to T ( which is the head of INFL)
- II. V-move is obligatory in all [+fin] clauses because the operator [PAST] must bind a variable.
- III. a. Agr is opaque in languages with poor inflection and transparent in those with rich inflection.
- b. Opaque Agr will prevent theta-grid transmission when V-move takes place across it.
- c. Unrestricted V- move is in essence lexically limited to those verbs that do not assign theta roles.
- d. Affix movement can be a solution to instances where V-move cannot apply.
- e. NegP is an inherent barrier to Affix movement.

If we can confirm principles I and II for Irish, then the remainder of our task is to set the correct variables for the parameters. I will look at each principle and parameter in turn.

### V-move in Irish

If we accept the derivational SVO Analysis, then there must be V-move in Irish. The two-step conception of verb movement can complete the SVO

Analysis by suggesting a final landing site for the fronted verb. If we look at other derivational accounts of word order — for example, the V2 analyses deriving verb second word order from an underlying SVO or SOV — the finite verb is usually said to land in COMP. This is motivated by the distribution of the V2 order: It is restricted to main clauses, where COMP is empty (Koster 1975, Platzack 1986).

The same cannot be said, however, for Irish. VSO order is not restricted to main clauses. Even [+fin] embedded clauses containing an overt lexical complementizer obligatorily show VSO order.

(4) Subordinate clauses in Irish:

a) [+fin] clause

*Ní creidim [ gur inis Cathal breag. ]*  
 NEG believe-1sg COMP told Charles a lie  
 'I don't believe that Charles told a lie.'

b) [-fin] clause with subject NP

*Ba mhaith liom [ sibh a dhul abhaile.]*  
 COP good with-me you-2pl go-VN to-home  
 'I would like you to go home.'

c) [-fin] clause,  $\emptyset$  subject

*Ba mhaith liom [ puins a ól.]*  
 COP good with-me punch drink-VN  
 'I would like to drink punch.'

It is only the [-fin] clause which may show a different order from VSO. This seems to indicate that verb movement in Irish is not dependent upon a feature of COMP but upon the value of the feature [+/- fin]. Furthermore, the landing site of the fronted verb does not seem to be COMP, since the verb is fronted even when COMP is filled with lexical material, as shown in (4a). I therefore suggest that V-move in Irish may be exactly the kind of two-step process which Pollock describes. The finite verb first moves to join with the element Agr, which is the head of AgrP, and the two consequently move up to the head of TP. Thus the final landing site of the fronted verb should be T. A look at the behavior of preverbal particles seems to confirm that this is indeed the position where the verb should come to rest.

**Preverbal particles as operators**

As stated in (3), the tense feature [PAST] is regarded by Pollock as an operator which obligatorily binds the verb. This assumption is easily extended to Irish, where the element expressing past tense is historically a pro-clitic preverbal particle, *do*. In Modern Irish, this particle is no longer fully overt, although phonologically its effect is still visible upon the initial consonants of verbs inflected for the past tense (5). The consonantal mutation lenition caused by the underlying *do* is the distinctive mark of the past tense upon Irish verbs. The presence of *do* is a bit more obvious upon verbs which begin with vowels. These require a *d'* prefix to signal past tense inflection (6).

(5) <i>mhol sé</i>	'he praised'	( <i>mol</i> , 'praise')
<i>bhris sé</i>	'he broke'	( <i>bris</i> , 'break')
<i>dhíol sé</i>	'he sold'	( <i>díol</i> , 'sell')
(6) <i>d'iarr sé</i>	'he asked'	( <i>iarr</i> , 'ask')
<i>d'ól sé</i>	'he drank'	( <i>ól</i> , 'drink')

These facts suggest that we can think of Tense as the element most closely connected to the verb and the one whose overt realization must appear directly before it. This supports placing the landing site of the finite verb in Tense.

There are other preverbal particles in Irish besides the tense marker which are equally amenable to a treatment as operators. A thorough description of these particles and their behavior is given in Stenson 1981. Only one preverbal particle is allowed before the initial verb, and if the meaning of a sentence requires that more than one particle be expressed, then the separate particles will phonologically merge to create an amalgamated form. Stenson treats the particles as 'grammaticized higher predicates' and gives the following analysis of how they combine phonologically:

- (7) Q + NEG + COP + PAST = *nár(bh)*  
 Q + NEG + COP = *nach*  
 Q + NEG + PAST = *nár*  
 Q + NEG = *nach*

Q + COP + PAST = *ár(bh)*

Q + PAST = *ar*

Q + COP = *an*

NEG + COP + PAST = *níor(bh)*

NEG + PAST = *níor*

NEG + COP = *ní*

COP + PAST = *ba*

The ordering defined by Stenson for the particles is thus as follows:

(8) Q + NEG + COP + PAST

I have adopted this order directly from Stenson in my proposal for the expanded-INFL syntax for Irish in (2). The hierarchical stacking effect of this ordering of particles is perfectly suited to the stacked constituent structure of the expanded-INFL syntax. The decision to give the copula particle status follows Ahlqvist 1972 and will be discussed in more detail in a moment. As Pollock notes, the nature of negation may vary cross-linguistically, being a full phrasal category in only some languages and possibly varying in its placement as either specifier or complement to the members of the expanded-INFL. For the moment I do not find any evidence to treat negation in Irish as a phrasal category, so I will continue to maintain that it is a preverbal particle generated in COMP.

If the Irish preverbal particles are all treated as operators along with [PAST], then it may be possible to provide an answer to why only one particle is allowed to appear before the verb. The answer may be that the variable of the fronted verb may only be bound by one overt operator.

#### Agr in Irish

Now we may turn to establishing what values Irish may have for the list of parameters set up earlier in (3). As Pollock shows, these parameters are sufficient to describe how the grammars of English and French differ from each other in predictable ways. The following table summarizes how the two grammars compare.

- |     |  |                                      |
|-----|--|--------------------------------------|
| (9) | English:   | French:                              |
|     | •Agr is opaque.  | •Agr is transparent.                 |
|     | •Theta-grids can NOT be transmitted.                   | •Theta-grids CAN be transmitted.     |
|     | •V-move is lexically restricted to non-thematic verbs. | •V-move is NOT lexically restricted. |
|     | •Affix move is needed.                                 | •Affix move is NOT needed.           |

These parameters are all interrelated, so that we should expect to find that Irish will behave either like English or like French. The crucial point seems to be whether Agr may be said to be opaque or transparent.

If we look at Irish verbal inflection, we can see that there is some overt morphological inflection. However, it is actually quite limited. As the present tense paradigm in (10) shows, it is in fact almost parallel to what we find in English: a trace of inflection is left in only one person of the paradigm.

- |      |                          |              |                       |           |
|------|--------------------------|--------------|-----------------------|-----------|
| (10) | 1 <i>cloisim</i>         | I hear       | <i>cloisimid</i>      | we hear   |
|      | 2 <i>cloiseann tú</i>    | you hear     | <i>cloiseann sibh</i> | you hear  |
|      | 3 <i>cloiseann sé,sí</i> | he,she hears | <i>cloiseann siad</i> | they hear |

Often Irish is cited as an example of a pro-drop language, but this is not entirely correct, since the only time we get any real pro-drop is in examples like *cloisim* where there exists an inflected form of the verb to be used. I will assume, then, on the basis of the limited verbal inflection appearing on the verb, that Agr in Irish is opaque.

#### Non-thematic verbs: COP and *bí*

An opaque Agr will in turn imply that theta-grids in Irish will not be transmitted after verb movement. In effect, it predicts that Irish will act like English. We should find that V-move is lexically restricted in Irish, just as it is in English.

However, that does not seem to be the case. As discussed above, there does not seem to be any indication that V-move is lexically restricted in Irish. Word order seems to show that V-move occurs obligatorily in all finite clauses, whether they are main or embedded clauses. Nevertheless, we

should check the behavior of possible non-thematic verbs in Irish before deciding that V-move is indeed unrestricted.

The non-thematic verbs which Pollock identifies as the only verbs in English allowed to undergo V-move are the auxiliaries *be* and *have*. The French equivalents of these, *être* and *avoir*, are as expected the only verbs allowed to undergo V-move in the French opaque Agr context, the infinitive clause. As Pollock points out, these verbs have homonyms which carry the lexical meanings of existence and possession and which must be thematic verbs. The equivalent of *be/être* in Irish would be the copula *is* and the verb *bí* (pres. *tá*), which also translates as 'to be'. Interestingly, Irish has no equivalent to *have/avoir*, either as an auxiliary or as a lexical verb denoting possession. There are instead two constructions used to express possession: *is* possessed *le* possessor, or *tá* possessed *ag* possessor.

- (11) a) *Tá carr agam.*                      b) *Is le Cáit an teach seo.*  
       be car at-me                            COP with C. the house DEM  
       'I own a car.'                         'Kate owns this house.'

Notice that the subject in these examples must appear as the object of a locative preposition (or as in Guilfoyle 1986, the subject must be an inherently casemarked NP). This situation is strikingly parallel to the 'exotic' French verbs of existence and possession discussed in Pollock and quoted here for comparison.

- (12) *Être ou ne pas être, telle est la question.*  
       [ PRO (ne) T pas Agr être [ e LOC ] ]  
       'To be or not to be, that is the question.'

Pollock resorts to assuming an abstract locative preposition to assign some theta role to the arguments involved in order to explain why the lexical *avoir/être* can still undergo V-move in an otherwise opaque context.

These examples from Irish suggest that we may have here an equivalent situation to the French one: that is, a locative preposition mechanism is used to assign theta roles in the face of V-move in an opaque Agr context. In fact, the evidence is much stronger in Irish than in French. We do not have to resort to motivating an abstract locative preposition in the lexicon, since we have an overt locative preposition clearly visible and absolutely obligatory in the syntax.

The same pattern construction, *tá* X Prep Y, is used to express a number of meanings other than possession that would in other languages be expressed by simple lexical verbs. Examples are listed in (13).

- |      |                         |                    |                  |
|------|-------------------------|--------------------|------------------|
| (13) | <i>tá a fhios agam</i>  | be knowledge at-me | 'I know'         |
|      | <i>tá Fraincis agam</i> | be French at-me    | 'I speak French' |
|      | <i>tá fadóir orm</i>    | be fear on-me      | 'I fear'         |
|      | <i>tá aiféala orm</i>   | be regret on-me    | 'I regret'       |
|      | <i>tá ocras orm</i>     | be hunger on-me    | 'I hunger'       |
|      | <i>tá súil orm</i>      | be hope on-me      | 'I hope'         |

The copula *is* is used in the same fashion to express meanings that would otherwise be expressed as simple verbs in other languages. The subject is given its theta role by the combination of an adjective and an overt locative preposition.

- |      |                       |                       |          |
|------|-----------------------|-----------------------|----------|
| (14) | <i>is féidir leis</i> | COP possible with-him | 'can'    |
|      | <i>b'éigean dó</i>    | COP able to-him       | 'must'   |
|      | <i>ba cheart dó</i>   | COP right to-him      | 'must'   |
|      | <i>ba chóir dó</i>    | COP proper to-him     | 'should' |

The above examples all have modal properties. Pollock treats the English modals as generated in Tense rather than in V. They thus do not have to undergo any V-move. Although Guilfoyle 1988 also generates the Irish modals somewhere in INFL, I think they are probably best treated in the same manner as any of the other copula constructions. We lose important word order generalizations if we treat them otherwise.

It has already been assumed following Ahlqvist 1972 that the copula acts as a kind of operator and allows a predicate adjective or noun to act in the capacity of a verb. Let us assume further that this adjective or noun given verbal status must consequently undergo V-move just as any verb would. This assumption seems to be supported both by the locative preposition facts I have just reviewed for the modals and by some word order variations observed with copula constructions expressing identification.

Irish copula constructions expressing identification might seem to have two subject NP. The extra pronoun is traditionally called the subpredicate, but it is notoriously difficult to give it any satisfactory place and explanation in a serious syntactic proposal. For the time being my own intuition is that

it is some kind of intrusive pronoun or expletive pronoun in Spec-Agr which 'shares' the subject role with the actual subject (which remains in Spec-VP). The different word orders in the examples given below may then be explained as the result of syntactic restrictions on V-move and on the placement of pronouns within the VP.

- (15) a) *Is fear é Tomás.*      *Is fear [é] [Tómas [t]]*  
 COP man him Thomas      T Spec-Agr Spec-VP V  
 'Thomas is a man.'
- b) *Is í Cait mo bhean.*      *Is ø [í] [Cait [mo bhean]]*  
 COP her Kate my wife      T Spec-Agr Spec-VP V  
 'Kate is my wife.'
- c) *Is í an múinteoir í.*      *Is ø [í] [t [an múinteoir] í]]*  
 COP her the teacher her      T Spec-Agr Spec-VP V  
 'She is the teacher.'

The three examples above illustrate the three consistent patterns of word order found with the copula and subpredicate. The order of (a) is that found when the predicate noun is itself a lexical head and the subject of the sentence is a full NP. In such cases, I suggest that the predicate noun undergoes V-move as any verb would. This places it in Tense, before the subpredicate pronoun. The order shown in (b) also involves a full NP subject and a predicate noun, however now the subpredicate appears immediately after the copula. The explanation for the different word order here seems to be dependent upon the nature of the predicate nominal *mo bhean*. Unlike the lexical head *fear* in (a), *mo bhean* is a phrasal category. V-move is a rule which is assumed to obey the Head Movement Constraint, so that only lexical heads may move to other lexical heads (Agr and Tense). If this is correct, then the phrase *mo bhean* will be prevented from moving, and the different word order in (b) will receive a straightforward explanation. The last word order illustrated in (c) appears when the subject is itself a pronoun instead of a full NP. In this example, the predicate nominal is a phrasal category, so it will remain in place in VP. The sentence final position of the subject may then be attributed to the obligatory rule of Pronoun Postposing, which postposes any pronouns left within the VP.

### Affix movement in Irish?

Judging from the data presented in the previous section, Irish seems to use the mechanism of locative prepositions to allow movement of verbs even over an opaque Agr. The other solution, the one which English uses (according to Pollock) for verbs that assign their own theta roles, is to invoke Affix movement: the verb remains in place in VP, and the inflectional affixes move down to join it. Since we have been maintaining that Irish behaves like English, we must ask whether the solution of Affix movement is also exploited in Irish grammar. There must, of course, be some way for the host of Irish verbs other than the copula and *bí* to transmit theta-grids despite an opaque Agr. If Pollock is right, then Affix movement is to be expected in Irish.

However, assuming Affix movement for Irish then jeopardizes our entire SVO derivational account for the VSO order of Irish. If affixes are allowed to move down to meet the Irish verb in VP, then the finite verb should be found in its original D-structure position in the surface syntax. Clearly this cannot be the case. If the finite verb were to remain in its D-structure position thanks to Affix movement, then the surface word order of Irish would be SVO instead of VSO. It is absolutely essential that the verb be forced to move up to Tense in order to obtain the desired VSO order.

But perhaps Affix movement does not jeopardize an SVO Analysis after all. It will only do so if we equate the V-move of Pollock's analysis with the verb movement which results in the VSO order of Irish. Consider the consequences of regarding them instead as two totally different processes. This would theoretically make it possible to maintain that Irish has *both* Affix movement and an obligatory verb movement to [+fin], i.e. Tense. Affix movement would be necessary to solve the problem of theta-grid transmission, while verb fronting to Tense would still be made obligatory by the strictly rightward case assignment value of INFL in Irish, as claimed by Sproat 1985 and explained earlier here.

There is at least one current analysis which treats Affix movement and verb movement as different and compatible processes. Falk 1990 demonstrates that Affix movement must be assumed for Modern Swedish in order to correctly derive the correct placement of clausal adverbs, most notably negation, within subordinate clauses. Verb movement in Swedish is similar to the type found in Irish in that it is universally obligatory in finite main clauses rather than being subject to any lexical restrictions, and its

obligatoriness is attributed to the same kind of case assignment requirements as those which are assumed to force verb movement in Irish. It should furthermore be noted that Swedish Agr is recognized as being morphologically poor (Platzack & Holmberg 1990) and would thus be opaque to transmission of theta-grids. With these facts in mind, it seems reasonable to consider that the lexically unrestricted verb movement in languages like Swedish and Irish may not always be direct evidence for any lack of Affix movement. We may have to recognize two types of verb movement: one that is indeed related to the transmission of theta-grids and the nature of Agr (Pollock's V-move), and one that is forced by the requirements of the case filter in spite of the nature of Agr. It is interesting to note that this introduces a possible 'power struggle' between the demand for theta-transmission and case assignment. Just in the small sample of four languages referred to here, the two types of verb movement correlate with the presence or absence of the Verb Second (V2) Phenomenon: English and French are non-V2 showing theta-controlled V-move, while Irish and Swedish are arguably V2 showing the case-controlled verb movement. Irish is of course verb-initial on the surface, but more and more researchers agree that VSO languages are actually only a specially related type of V2 language (Haider 1986). The implications of these correlations are beyond the scope of this article but deserve mention nevertheless.

#### CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH

As has been shown, an expanded-INFL syntax is readily adaptable for Modern Irish. It is compatible with the SVO Analysis for the VSO word order of Irish and in addition specifies a landing site for the verb movement postulated by that analysis. It can accommodate the morphological facts surrounding the behavior of the Irish preverbal particles. It may give some new insight into the 'exotic' prepositional idioms which are so common in Irish, and it suggests a possible solution to the seemingly impossible problem of explaining varying word orders found with copula constructions expressing identification. All of this makes the expanded-INFL a worthwhile analysis to pursue further, I feel, despite the questions it raises concerning the nature of Agr and theta-grid transmission in Irish. A more detailed investigation of the properties of Irish Agr is already in progress as a sequel to the present paper.

In closing, I would like to mention one more area of Irish syntax which might appear in a new light if viewed against the backdrop of the expanded-INFL analysis. Pollock claims that V-move is restricted to tensed clauses. If this is correct, then the prediction is that we should be able to find the verb in untensed clauses in its original D-structure position. In essence, it is a restatement of the old rule of thumb that the word order in the subordinate (here untensed) clause more closely represents the underlying word order of a language. If we apply this to Irish, then we might want to consider revising the SVO Analysis and proposing an SOV Analysis instead: The word order most often found in Irish infinitive clauses is namely SOV. This was illustrated in (4b,c). The original SVO Analysis of Sproat 1985 was based upon the verb phrase VO order established by McCloskey 1983 on the basis of progressive VP like the following:

- (16) *Tá Máirtín [ag casadh amhráin]*  
       be Martin at sing-VN a song  
       'Martin is singing a song.'

The progressive in Irish, just like the infinitive, is formed by what is traditionally called the verbal noun. Syntactically, it is in every sense a noun (see McCloskey 1983), but with the addition of the particles *a* (-fin) and *ag* (aspectual progressive) it plays the same role as a verb in the syntax. The discrepancy between the VO order of the progressive and the OV order of the infinitive is as yet unsolved, but I think that the expanded-INFL analysis even here suggests an interesting solution to explore. If the aspectual progressive is indeed a VP, then it appears in a tensed clause, and there may be some V-move associated with it. The infinitive, being untensed, will show no V-move at all. An underlying SOV structure might just as easily be adapted to the expanded-INFL syntax presented here as is an SVO. An SOV syntax has in fact been proposed before for Irish (Sells 1984), and it may be worth reconsideration now in light of the expanded-INFL structure. Working out the details of a full SOV syntax for Irish, however, requires further research.

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## New Phonetic Programs for Macintosh

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### INTRODUCTION

The Macintosh computer from Apple has been widely used as a tool for research at the university of Lund. This is partly because of an agreement between Apple Computer, Inc. and Lund University, but also because of the easy and user-friendly programs that the Macintosh provides. This has made Macintosh a very popular computer at our department. The computer offers great possibilities in phonetic research for handling text and graphics for writing and publishing. It is also possible to use it for statistical analysis of previously collected data, and as a terminal in connection with another computer to capture graphic output in an easy way.

However, the lack of efficient programs and the relatively low speed for complex calculations of the Macintosh MC68000 CPU (central processing unit), has made the small Macintosh Plus unsuitable for wider use in phonetics for the analysis of pitch, synthesis etc. Some programs like Sound Edit and SoundWave make it possible to record speech on the Macintosh. The programs may be used for segmentation and listening, and also for recording sound for incorporation into other programs, but they are not really suitable for 'heavy' analysis. This changed with the introduction of the Macintosh II computer. This computer is equipped with an MC68020 CPU, which is a better CPU than the one in the Macintosh Plus, and, more interesting, an MC68881 floating point co-processor which helps the CPU with numerical calculations. Using the floating point co-processor in a Macintosh program increases the speed significantly, although it costs us the ability to run the program on an ordinary Macintosh Plus.

### MAC SPEECH LAB

One program for Macintosh that has proved to be a useful tool both for research and teaching is the Mac Speech Lab II from GW Instruments, Inc. Mac Speech Lab II consists of a card with analog-to-digital converter (and vice versa) and anti-aliasing filter, which is to be plugged into one slot in the Macintosh II computer, and a program called Mac Speech Lab