Person hierarchy effects and Old Irish infix and suffix pronoun distribution

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1 Introduction

Object pronouns in Old Irish come in two forms – they are either 'infixed' or suffixed:

- 'Infixed' pronouns are placed between preverbal particles – which can be either preverbs or particles with other kinds of functions (known in the traditional grammar as 'conjunct particles'), e.g. negation or complementizers – and the verb, e.g. *fo**s**-ceird* 'he throws it' (Meid 2015, *Táin bó Froích* 16,173)
- Suffixed pronouns are suffixed at the end of the verb, e.g. *cartha-**i*** 'she loves him' (Meid 2015, *Táin bó Froích* 2,7)

The distribution between the two types of object pronouns has already been characterized by Cowgill (1987), but it does not seem to be based on natural classes. Some morphosyntactic contexts only allow infixed pronouns (e.g. the presence of a preverb or conjunct particle; certain tenses; whether the clause is relative). In other contexts, infixed and suffixed pronouns compete, depending on the person and number of the verb form, and the person, number, and gender of the object pronoun. In this paper, I try to account for the distribution along person and number (together with gender, these are also known as 'ϕ-features') through theoretical mechanisms that have been recently developed to explain person and number hierarchy phenomena across languages.

For reference, the tables below list the different forms of object pronouns.

Table 1: 'Infixed' pronouns:

	Class A		**Class B**		**Class C**	
	sg.	**pl.**	**sg.**	**pl.**	**sg.**	**pl.**
1st	m^L	*n*	tam^L	*tan*	dam^L	*dan*
2nd	t^L	*b*	tat^L	*tab*	dat^L	*dab*
3rd M	a^N	$s^{(N)}$	t^N	$ta^{(H)}$	$(d)id^N$, $(d)^N$	$ta^{(H)}$
3rd F	$s^{(N)}$		ta^H		da^H	
3rd N	$(a)^L$		t^L		$(d)id^L$, $(d)^L$	

Table 2: Suffixed pronouns:

	singular	**plural**
1st	*-um*	*-unn*
2nd	*-ut*	*-uib*
3rd M	*-i(t)*	*-(i)us*
3rd F	*-(i)us*	
3rd N	*-i(t)*	

In section 2 I will survey the distribution of the two types of object pronouns as outlined by Cowgill (1987), and, based on Eska (2003), suggest what the distribution may have looked like earlier in the language; in section 3 I will introduce the theoretical framework and use it to analyze the Old Irish data; in section 4 I will discuss some remaining problems; finally, conclusions and potential further steps can be found in section 5.

2 The distribution

2.1 Verbal categories requiring infixation

Infixed pronouns are selected when:

(a) A preverb is present:
d *a* *gní*
PRV 3SG.OBJ.NEUT do.3SG.PRES.

'He does it' (Stokes and Strachan 1901, Wb 26a12)

(b) A conjunct particle is present:
ní *m* *boí*
NEG 1SG.OBJ. be.3SG.PRET.

'He did not have' (Stokes and Strachan 1901, Ml 78a4)

(c) The verb is imperfect, past subjunctive, or secondary future, where, in the absence of another preverbal particle, the so called 'dummy particle' *no-* is required (even when there are no object pronouns involved):
n *a* *mberad*
PRT 3SG.OBJ.MASC. carry.3SG.IMPF.

'He used to carry him' (Bergin 1905, 222, *A fragment of Old Irish*)

(d) The verb is imperative, with insertion of *no-*:
n *a* *nglanad*
PRT 3SG.OBJ.MASC. purify.3SG.IMPV.

'Let him purify himself' (Stokes and Strachan 1901, Wb 11d8)

(e) The verb is relative, with insertion of *no-*:
no *d* *nail*
PRT 3SG.OBJ.MASC. nourish.3SG.PRES.

'(He) who nourishes him' (Stokes and Strachan 1901, Wb 5b28)

(f) The verb is passive, with insertion of *no-* – there are only 3rd person forms of the passive in Old Irish, but the other persons can be expressed with the addition of object pronouns:
no *n* *líntar*
PRT 1PL.OBJ. fill.3PL.PRES.PASS.

'We are filled' (Stokes and Strachan 1901, Ml 18c3)

2.2 Verbal categories in which the distribution depends on ϕ-features

The remaining cases (i.e. the verb is simplex; not preceded by a conjunct particle; present, present subjunctive, future, or preterite; non-relative; active) are the ones whose distribution I aim to explain. The competition here is dependent on ϕ-features.

Suffixed pronouns are selected when:

(g) The verb is 3rd singular and the object pronoun 3rd singular masculine/neuter:
bērth *i*
carry.3SG.FUT. 3SG.OBJ.MASC./NEUT.

'He will bear it' (Stokes and Strachan 1901, Wb 23a19)

(h) The verb is 1st plural and the object pronoun 3rd singular masculine/neuter:
guidm *it*
beg.1PL.PRES. 3SG.OBJ.MASC./NEUT.

'We ask it' (Stokes and Strachan 1901, Wb 15d18)

(i) The verb is 3rd plural and the object pronoun 3rd singular masculine/neuter:
gebt *it*
take.3PL.FUT. 3SG.OBJ.MASC./NEUT.

'They will take him' (Stokes and Strachan 1901, Wb 26a8)

(j) The verb is 1st singular future (!!) and the object pronoun 3rd singular masculine/neuter:
géba *it*
take.1SG.FUT. 3SG.OBJ.MASC./NEUT.

'I will take it' (Knott 1936, *Togail bruidne Da Derga* 73,664)

Variation between suffixation and infixation with dummy *no-* is found when:

(k) The verb is 3rd singular and the object pronoun 3rd singular feminine or 3rd plural:
no *s* *nesrassaigedar*
PRT 3SG.FEM./3PL.OBJ. invalidate.3SG.PRES.

'He makes it void' (Stokes and Strachan 1901, Ml 51b27)

it *ius*
eat.3SG.PRES. 3SG.FEM./3PL.OBJ.

'He eats it' (Stokes and Strachan 1901, Ml 102a15)

Infixation with dummy *no-* is selected in all other cases:

(l) *n* *a* *gníu*
PRT 3SG.OBJ.NEUT. do.1SG.PRES.

'I do it' (Stokes and Strachan 1901, Wb 3c30)

Below is a table encoding the information above. **I** signals that the 'infixed' pronoun is required, **S** signals that the suffix pronoun is required. **S*** signals that the suffixation requirement seems to be only relative to the future tense.

Table 3

			OBJ.								
			sg.					**pl.**			
			1st	**2nd**	**3rd**			**1st**	**2nd**	**3rd**	
					M	**N**	**F**				
SUBJ.	**sg.**	**1st**	**I**	**I**	**S***	**S***	**I**	**I**	**I**	**I**	
		2nd	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**	
		3rd	**I**	**I**	**S**	**S**	**I**	**S**	**I**	**I**	**I**	**S**
	pl.	**1st**	**I**	**I**	**S**	**S**	**I**	**I**	**I**	**I**	
		2nd	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**	
		3rd	**I**	**I**	**S**	**S**	**I**	**I**	**I**	**I**	

However, the 3rd singular form of the substantive verb is attested with suffix pronouns in all persons and numbers to express possession, e.g. *tath-**ut***, 'there is to me', 'I have' (Thurneysen 1935, *Scéla mucce Meic Dathó*, 3,20); moreover, in archaic texts we can find 3rd singular verb forms with suffix pronouns in persons other than the 3rd, e.g. *ainsi-**um***, 'may he protect me' (Stokes and Strachan 1903, Thes. ii 352.14), and the suffixation pattern seems to be obligatory for 3rd singular feminine and 3rd plural pronouns. This would make the whole third row in the table white.

When taking into account the phonological explanation for this distribution proposed by Eska (2003), then we could consider the possibility of the grammaticality of suffix pronouns for all 3rd plural verb forms at an earlier stage in the language. He argues that:

- The 3rd plural verb form plus suffix pronoun complex, just as the 3rd singular verb form plus suffix pronoun complex, should not result in phonologically opaque forms. This should allow for the preservation of suffixation for all of object pronouns (i.e. the whole final row should be white, together with the third one)
- However, the overwhelming predominance of morphological categories which require dummy *no-* (see above) pushes most of the 3rd plural verb form plus suffix pronoun complexes to analogically succumb to the infixing pattern

- Other forms (i.e. when the subject is 1st or 2nd person) should privilege the infixation pattern because the phonological changes in the history of the language make the complex with suffix pronouns indistinguishable from the forms without a pronoun[1]

In this view, the earlier distribution could have looked like this:

Table 4

			OBJ.							
			sg.					**pl.**		
			1st	**2nd**	**3rd**			**1st**	**2nd**	**3rd**
					M	**N**	**F**			
SUBJ.	**sg.**	**1st**	**I**	**I**	**S***	**S***	**I**	**I**	**I**	**I**
		2nd	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**
		3rd	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
	pl.	**1st**	**I**	**I**	**S**	**S**	**I**	**I**	**I**	**I**
		2nd	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**
		3rd	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**

I assume that this is the original distribution and accept Eska's idea that the predicted yet unattested cases of suffixation were gradually substituted with the infixation pattern via analogy.

3 Hierarchy effects – a possible explanation

3.1 Theoretical model

It is possible to frame the distribution outlined in section 2.2 under recently developed theories of syntax that model the so-called 'hierarchy effects'. It has been shown that arguments can be ranked according to the grammatical properties they bear in a given language. This ranking often has morphosyntactic consequences in terms of agreement or of restrictions on the person features within combinations of arguments (the latter phenomenon is known as the Person Case Constraint). The ranking is different depending on the language, although typologically some tendencies are more common. In terms of person ranking, the 3rd person tends to be lower on the hierarchy scale. In terms of number ranking, the singular is normally lower.

Hierarchy effects are characterized by a configuration containing two DPs whose behavior depends on whether the structurally higher DP is ranked higher on the hierarchy scale than the structurally lower DP, and viceversa.

1. In Eska's analysis the 1st person verb plus 3rd singular object complex should also be opaque, and yet is attested.

The modelling of these phenomena rely on concepts related to the theory of agreement, namely:

- Agree: given an unvalued feature *F* on a head H, look for an XP bearing a valued instance of *F* and assign that value to H
- Unvalued features – [u*F*] features satisfied by triggering Agree
- Probes – heads bearing [u*F*]
- Goals – elements bearing [*F*] (a valued feature)

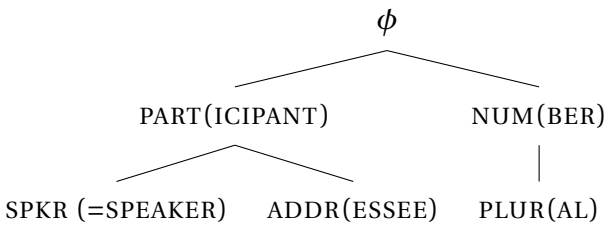
Put simply, the probe looks for goals to satisfy its unvalued features. As argued by Deal (2015), there is also a distinction between which features are necessary to trigger the *interaction* (INT) of a probe with a goal, and which are necessary for the *satisfaction* (SAT) of such probe. This allows for the probe to access different goals until its unvalued SAT features have been met. In the author's formulation:

(1) A probe may interact with a feature set F even if it may only be satisfied by feature set G, where F,G $\subseteq \Phi$ (the set of ϕ-features) and F $\neq$ G

I also adopt the most recent *dynamic satisfaction* model developed by Deal (2021), whereby a given language can have one or more *dynamic* ϕ-features. A *dynamic* ϕ-feature is copied from the first goal, and this determines what can be probed further (i.e. the INT condition might change after the probe has accessed its first goal based on whether the *dynamic* feature is found in that goal).

Finally, following Harley and Ritter (2002), Béjar (2003), and other work, I assume that person and number features are arranged in a feature geometry such that the features at the top are entailed by those at the bottom:

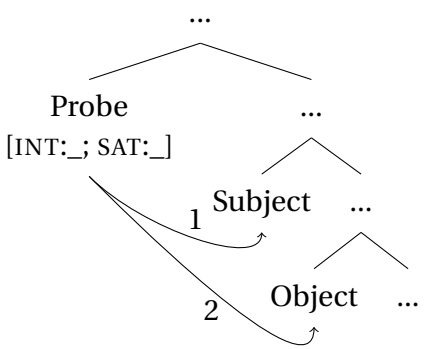
(2)



3.2 Analysis of Old Irish data

The theory introduced above can be adapted to model the choice of infixed and suffixed pronouns that depends on ϕ-features in Old Irish, although some exceptions remain. For the Old Irish data, I posit the probe to be above both the subject and the object, so that the probe will first access the subject (the first accessible goal), then the object (the second accessible goal):

(3)



For the moment let us focus on person features. The arguments, depending on what persons they are, will have the following valued features:

(4)

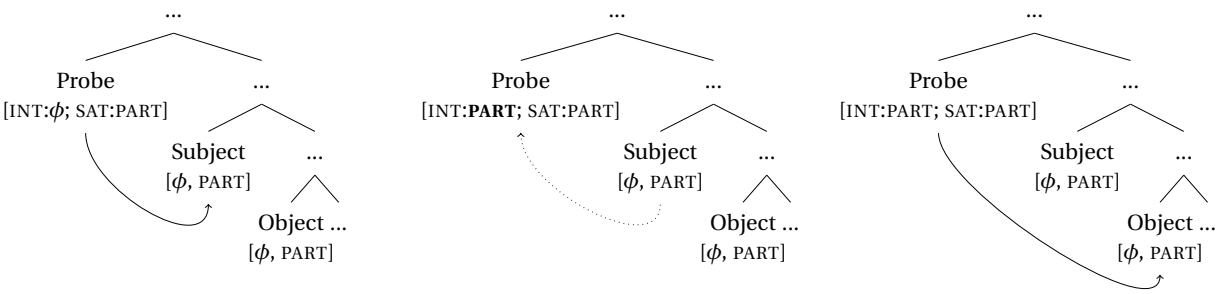
1st person	2nd person	3rd person
[ϕ]	[ϕ]	[ϕ]
[PART]	[PART]	
	[ADDR]	

The probe starts with the following unvalued features: [ϕ] as INT condition, and [PART] as SAT condition. However, if there is a [PART] feature in the subject (the first goal), this becomes the INT feature for the next time the probe tries to interact with a goal (i.e. the [PART] feature is *dynamic*).

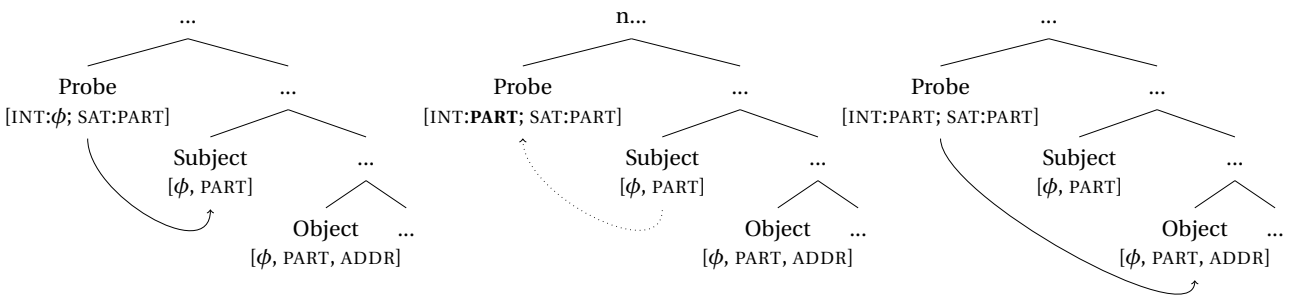
3.2.1 1st/2nd person subject plus 1st/2nd person object

The successful satisfaction of the [PART] feature in the subject should trigger the choice of infixed pronoun (i.e. movement of the pronoun to the left of the verb?), so long as it is possible for the probe to access the object which needs moving, and copy its features. This is true for the following cases, which encode respectively:

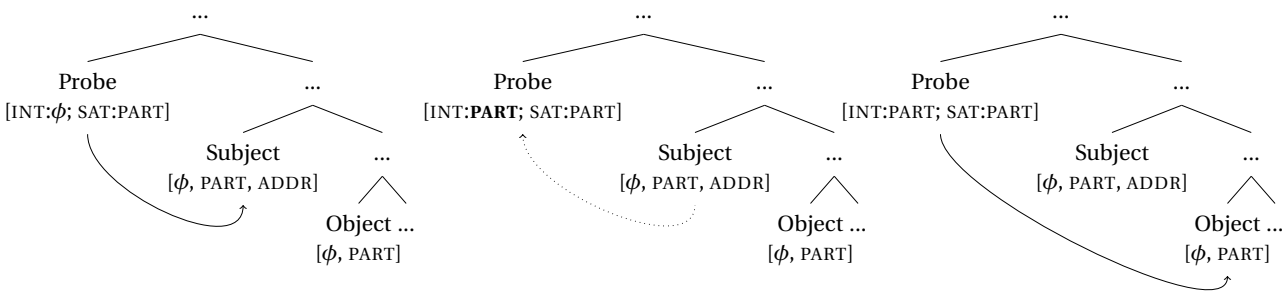
(5) 1st person subject plus 1st person object, e.g. *no-m-charaimm* 'I love myself':



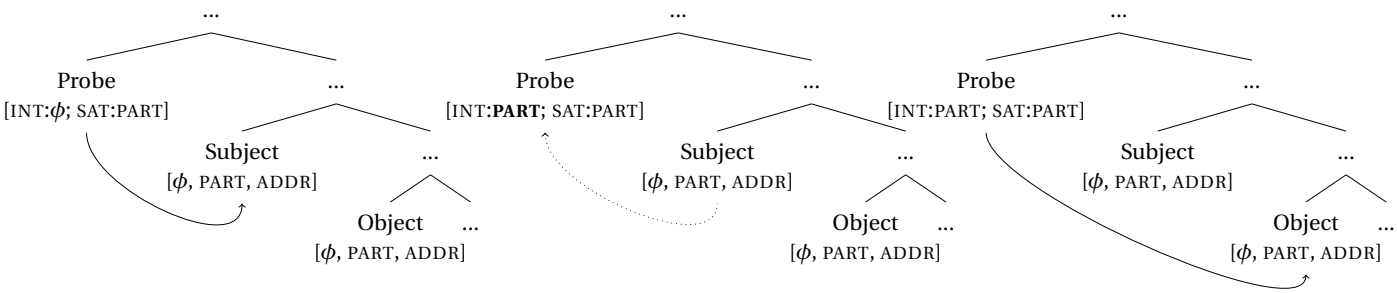
(6) 1st person subject plus 2nd person object, e.g. *no-t-charaimm* 'I love you':



(7) 2nd person subject plus 1st person object, e.g. *no-n-caraid* 'you all love us':



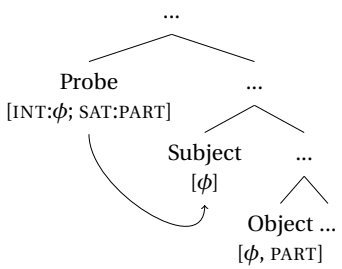
(8) 2nd person subject plus 2nd person object, e.g. *no-b-caraid* 'you all love yourselves':

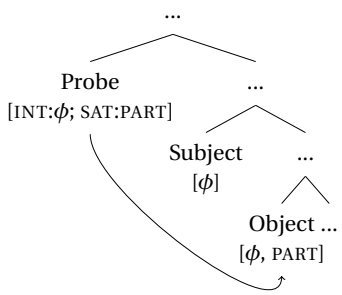


3.2.2 3rd person subject plus 1st/2nd/3rd person object

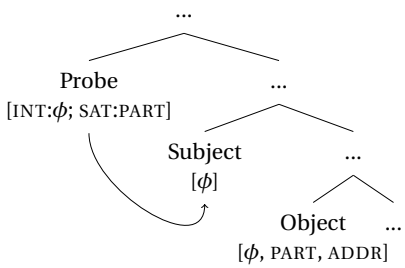
Let us now move on to the 3rd person subject complexes, where suffix pronouns are selected in all cases. What happens here is that the [PART] condition is not met by the subject (therefore not setting the stage for movement of the object to the left of the verb?). Further, the INT condition does not change after the probe accesses the subject (since the subject only possesses a [ϕ] feature), which allows for the probe to access all possible objects as well, finding the features it needs to copy.

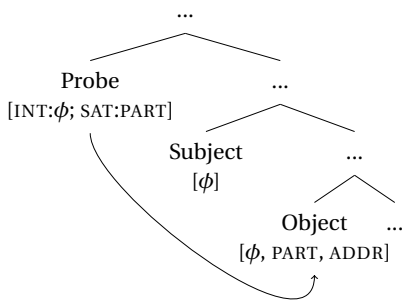
(9) 3rd person subject plus 1st person object, e.g. *tāth-unn* 'we have':



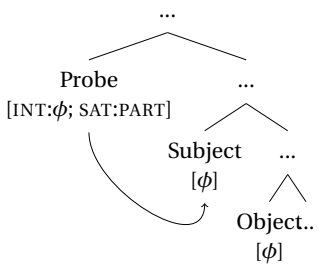


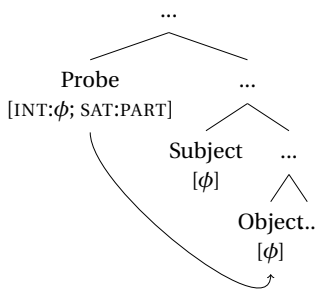
(10) 3rd person subject plus 2nd person object, e.g. *tāth-ut* 'you have':





(11) 3rd person subject plus 3rd person object, e.g. *tāth-us* 'she has':





Note that the SAT condition is not met in (11). This does not result in ungrammaticality.

3.2.3 1st/2nd person subject plus 3rd person object

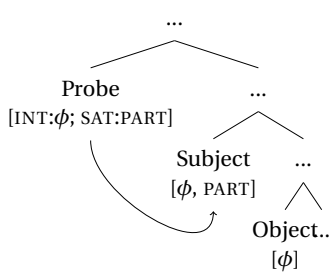
When the subject is 1st or 2nd person and the object is 3rd person, it becomes impossible for the probe to interact with the object once the [PART] feature becomes the new INT contition. The way the language repairs the impossibility for interaction with its object should be a choice of

suffix pronoun (movement to the left of the verb is no longer licensed?). Yet, the data show that infixation is still preferred except in the 1st person subject with 3rd person singular MASCULINE or NEUTER object complex.

We might at this point invoke number features to explain why the 1st/2nd person subject plus 3rd person plural object complex still prefers the infixation pattern. Unvalued number features can only be probed after person features, and only with a goal that has not yet been accessed. I posit [PLUR] as both INT and SAT condition for number. This way, the object which could not be accessed by the probe's person features, is still accessed by the probe's number features (and again, its features copied). The infix pronoun is therefore still selected.

(12) 1st person subject plus 3rd person plural object, e.g. *no-s-caram* 'we do not love them':

i)



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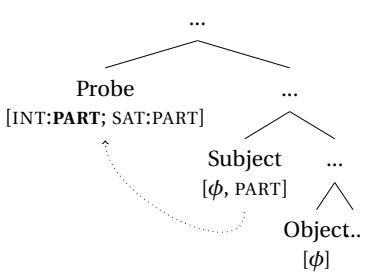

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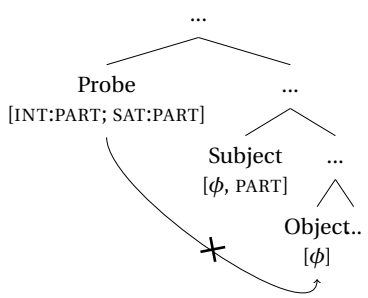

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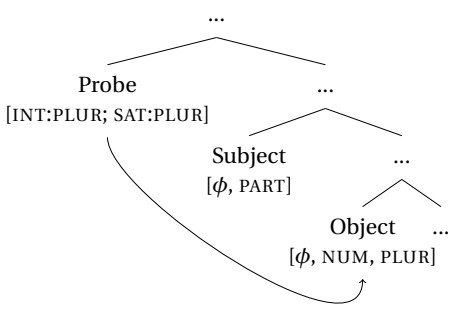
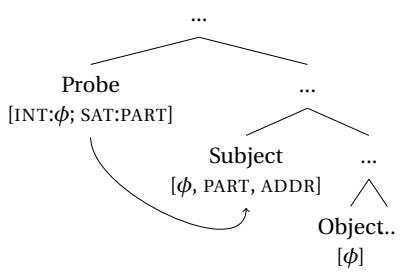


(13) 2nd person subject plus 3rd person plural object, e.g. *no-s-carai* 'you do not love them':

i)



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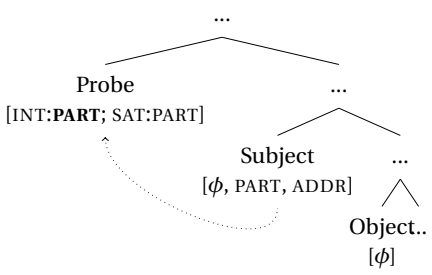

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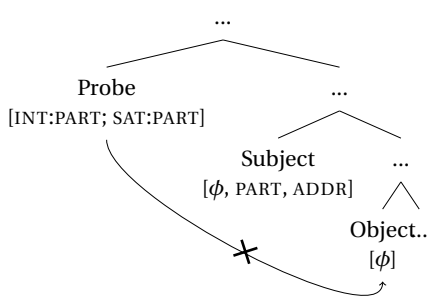

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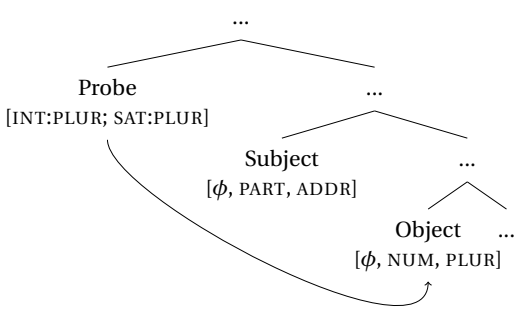
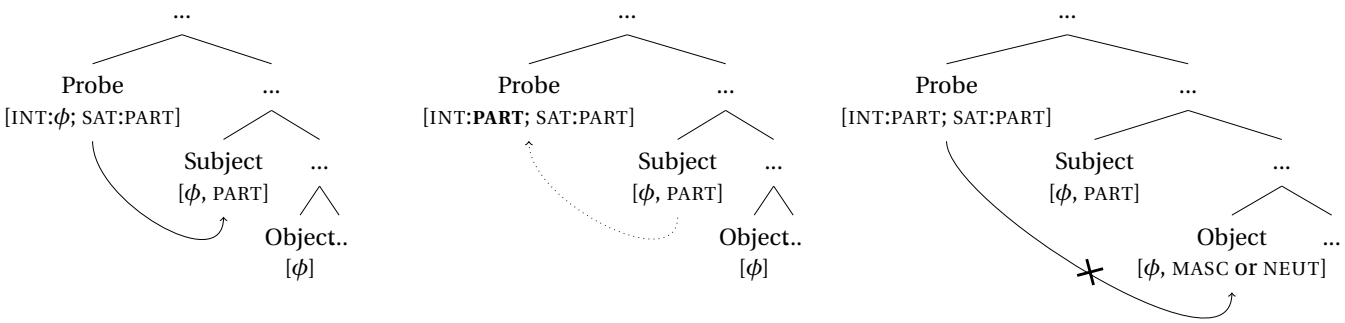
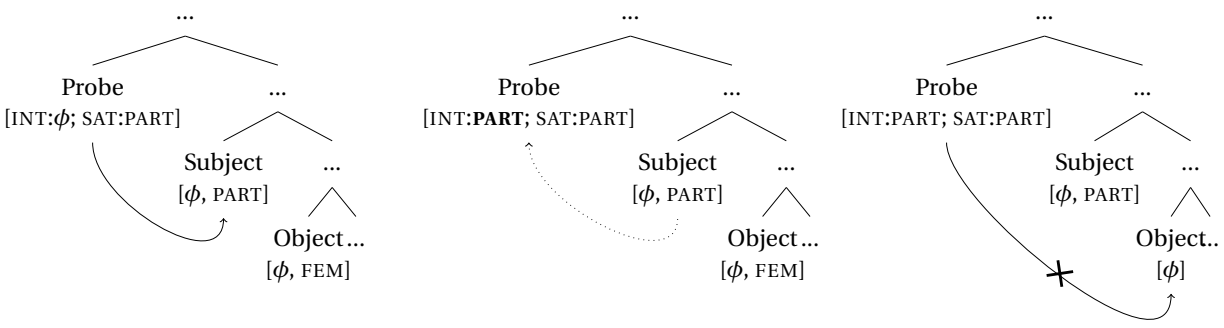


For the 1st/2nd person subject plus 3rd person singular object complex, however, the repair strategy (i.e. suffixation), should be selected. This is not matched by the data, which shows that a 2nd person subject plus 3rd person singular object complex selects infixation, and that infixation is always selected when the object is 3rd singular FEMININE:

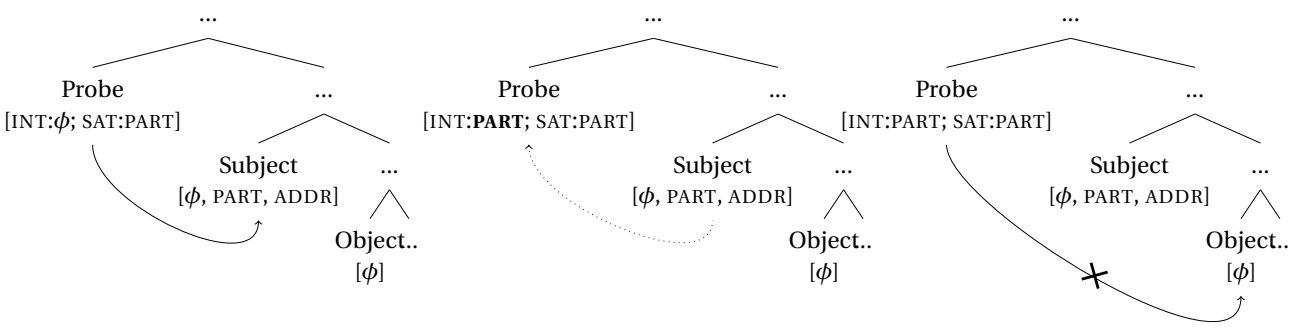
(14) 1st person subject plus 3rd person singular MASCULINE or NEUTER object, e.g. *géba-it* 'I will take it'; **repair strategy** → ✓



(15) 1st person subject plus 3rd person singular FEMININE object, e.g. 'no-s-caraimm' 'I love her'; **repair strategy** → X



(16) 2nd person subject plus 3rd person singular object, e.g. *n-a-carai* 'you love him'; **repair strategy** → X



I believe it might be possible to adapt the theory so that gender features are also matched by a probe at a later stage (as happens for number features), therefore explaining the choice of infixation. Because there is not as much literature on gender hierarchy, however, I do not feel as confident making statements as to which gender should be ranked higher, nor as to when the gender feature set should come into play. What I can say with certainty, however, is that the FEMININE would need to be higher on the hierarchy to explain the Old Irish data.

The problem in (16) is a more difficult one. The initial probe needs to be the same across the whole system, and yet this one does not predict the correct result for this case. This is the reason why I introduced the [ADDR] feature for 2nd person. While everywhere else it seems clear that a 1st/2nd > 3rd person hierarchy is in place, perhaps this reveals that 2nd person should be at the top of the scale, but the system does not show this anywhere else.

4 Remaining problems

As discussed in section 3, this analysis does not work for all of the verbal form/pronoun combinations:

- The behavior of 1st person subject plus 3rd singular feminine complex remains unexplained, although it may be possible to expand the theory as to accommodate this problem.
- The major issue is the the behaviour of the 2nd subject plus 3rd singular object, which is harder to fit into the framework.

One more thing that needs clarification, and which to my knowledge this theory cannot handle, is the fact that the 1st singular verb plus 3rd singular M/N object complex only requires suffixation in the future, but not in the present, present subjunctive, and preterite. This might simply be due to the fact that suffixed pronouns are in the process of disappearing. My assumption in section 2 that 3rd plural verbs originally selected suffix pronouns, but no longer do in the attested language, is obviously also a symptom of this. Why the future specifically would be the last tense to hold on to suffixation though is less clear.

5 Conclusion and potential further steps

In this paper we have looked at the peculiar distribution of the two different forms of object pronouns in Old Irish and tried to advance an analysis to account for it in terms of person (and to some extent, number) hierarchy. The analysis reveals that Old Irish, at least in relation the choice of object pronouns, seems to have a 1st/2nd » 3rd person hierarchy, and a PLURAL » SINGULAR number hierarchy. The analysis however does not fully handle the data – some phenomena remain unexplained and might need a different approach.

It is worth noting that this strange person/number distribution is found elsewhere in Old Irish grammar. The language has relative forms of simplex verbs, but only in the 3rd singular, 1st plural, and 3rd plural. For other persons (or for verbs with preverbs) other strategies are used to express a relative clause, namely lenition or nasalization (after either *no-* or a preverb), e.g.:

caras	*no charaimm*
love.3SG.PRES.REL.	PRV (REL.LEN.)love.1SG.PRES.
'(he) who loves / whom he loves'	'(I) who love / whom I love'

In the same way, the fact that morphological forms of the passive only exist for the 3rd person might also be related to the hierarchy. Although I won't go into either of these issues here, analyses of these phenomena may well reveal that the person hierarchy reaches more areas of the grammar than just the choice of object pronouns.

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