Accounting for Invariant Inflection with Movement: Prepositional A-bar dependencies in Scottish Gaelic

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Abstract

This paper contributes to our understanding of A-bar dependencies and dialect variation in Scottish Gaelic by i) reporting on two patterns of invariant inflection (3MSG φ-inflection and definite inflection) on the fronted preposition in prepositional A-bar dependencies in the dialects of Lewis and Uist and ii) establishing that these dialects form A-bar dependencies via movement. Invariant inflection is puzzling in movement dependencies, and two types of invariant inflection even more so. I propose that these inflectional patterns are a reflex of how copies are treated in the morphology: when the copy has a minimal structure, the morphology treats it as a pronoun; and when the copy has a larger phrasal structure, the morphology treats it as a DP headed by a definite determiner.

1 Introduction

In prepositional A-bar dependencies in the Scottish Gaelic dialects of Uist and Lewis there are two patterns of inflection on the fronted preposition, one involving definite inflection and the other involving phi-inflection. With definite inflection, hereafter the DEF-fronting pattern (1),¹ the preposition is in the definite form and precedes the relative complementizer an, which triggers the dependent form of the verb (all bolded in (1)).²

(1) na boireannaich bhon an d’fhuaír mi an tiodhlac
the.PL women from.DEF C.REL get.PAST.DEP 1SG the gift
	‘the women I got the gift from’

¹Data comes from my own fieldwork, primarily with speakers of Lewis dialects, and, where indicated, from published material. I would like to thank Gillebride Mac’IlleMhaoil, Anne Frater, Iain Greumach, Andrew Dunn, Angela Weir, Tormod Smith, Iain Campbell, and Morag MacLean for sharing their thoughts and judgments.

²I use the following abbreviations in this paper: C.REL=relative complementizer, NEG=negation, INDEP=indeendent verb form, DEP=dependent verb form, REL=relative verb form, PAST/PRES/FUT=past, present, future tenses, COND=conditional, PROG=progressive, PERF=perfect, NOM/GEN/DAT=nominative, genitive, dative case, DEF=definite form, M/F=masculine, feminine gender, SG/PL=singular, plural number, VN=verbal noun.
The DEF-fronting pattern is used with the majority of prepositional A-bar dependencies: relative clauses, clefts, and which-questions.

In the phi-inflection pattern, in (2), henceforth the 3MSG-fronting pattern, the preposition takes the 3MSG form and precedes the relative complementizer a, which triggers the independent form of the verb (bolded in (2)).

(2) Cô bhuaithe a hluair thu an tiodhlaic?
   who from.3MSG C.REL get.PAST.INDEP you the gift
   ‘Who did you get the gift from?’ 3MSG-FRONTING, UIST

The 3MSG-fronting pattern is found with simple wh-questions formed on cô ‘who’.3

Both these patterns differ from the one reported in Adger and Ramchand (2005), illustrated in (3). In this non-fronting pattern, not available in the dialects under discussion here, the preposition is stranded in situ and takes 3MSG inflection and the relative complementizer a is used.

(3) a’ chruobh a dh’òl thu an leann fodha
   the.F.NOM tree C.REL drink.PAST.INDEP you the beer under.3MSG
   ‘the tree you drank beer under’ SKYE

(Adger and Ramchand 2006: 10)

This latter non-fronting pattern and the DEF-fronting pattern are identified as points of dialect variation in Adger and Ramchand (2006). I extend their study in adding the 3MSG-fronting pattern to the range of prepositional inflection in A-bar dependencies and in discussing some deeper syntactic differences between the fronting and non-fronting patterns. In particular, I discuss the dialects of Scottish Gaelic spoken on the islands of Lewis and Uist in the Outer Hebrides. Adger and Ramchand’s (2006) study indicates that Lewis and Uist share morphosyntactic similarities to the exclusion of the dialects of Skye.

In addition, the two fronting patterns pose a morphosyntactic puzzle: both the definite inflection and 3MSG inflection on the fronted preposition are invariant and are not due to any properties of the pivot. This puzzle is the analytic focus of this paper: can there be a unified analysis for these two invariant inflectional patterns?

I organize this paper as follows: I first present evidence that A-bar dependencies in these dialects are formed via movement. In section 3 I discuss the morphosyntactic facts necessary to understand the two inflectional patterns and the subsequent analysis (section 4). Section 5 concludes.

2 Evidence for Movement

In this section I present a range of data which strongly support a movement account of A-bar dependencies in the dialects of Uist and Lewis, in contrast to the data reported in Adger and Ramchand (2005), which seems to represent the Skye dialect.4 This suggests that beyond

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3 Attempts to elicit similar patterns with dé ‘what’ proved futile. My consultants preferred to use cô for inanimates with a fronted preposition.

4 Adger and Ramchand are unclear on this point, but this seems to be a reasonable conclusion based on the data they discuss in their (2006) paper.
the morphosyntactic differences identified in Adger and Ramchand (2006), there are deeper syntactic differences in A-bar dependencies across the Scottish Gaelic dialects.

2.1 Displacement

The most obvious piece of evidence for movement is the displacement of the preposition to a position preceding the relative complementizer (4); the expected position for the preposition is following the object an uabhal.

(4) dè am bocsa an [an] do chuir thu an uabhal ____?

\[dè \ am \ bocsa \ an \ do \ chuir \ thu \ an \ uabhal?\]
what the box in.DEF C.REL put.PAST.DEP you the apple
‘Which box did you put the apple in?’

cf. Chuir thu an uabhal an [a] bhocsa seo.

The fact that the pivot am bocsa is apparently displaced is not sufficient evidence for movement (see Adger and Ramchand (2005) for a non-movement analysis of Scottish Gaelic A-bar dependencies). However, the fact that the preposition is not in situ is suggestive of movement, since the preposition is not expected to be displaced except via some sort of pied-piping operation.

If the fronted preposition gets there via pied-piping movement, we expect it to be able to move out of its local CP. This expectation is borne out. In long-distance A-bar dependencies, the preposition may move to the edge of the higher clause (5a).

5 For discussion on the corresponding change in the form of the complementizer, see Adger and Ramchand (2005), McCloskey (1990), and McCloskey (2002).
The inflected preposition may also be stranded in an intermediate position (5b). This is also expected on a movement account, assuming successive cyclicity of A-bar movement (McCloskey 2002).

The displacement of the preposition to a position which is not the final landing site of the pivot itself (5b) and the availability of the preposition to move to a higher CP in long-distance dependencies (5a) provides strong evidence that there is movement of some type, at least for something like the preposition and an operator (these examples do not sufficiently show that the pivot itself has moved from inside of the relative clause). The next arguments provide support for movement of the pivot as well.

2.2 Clefted Prepositional Phrases

Prepositions may be involved in selectional relations with verbs or may provide an idiomatic meaning as the predicate. For prepositions of both functions, clefting the prepositional phrase is grammatical, with no change in interpretation. This signals that at some point in the derivation the prepositional phrase is in a relative clause-internal position.

2.2.1 Selected Prepositions

Prepositions which are selected for by the verb may be clefted. Assuming selection requires a local relation at the start of the derivation (i.e. at merger), these examples indicate that the clefted constituent originates inside of the relative clause. In (6), the verb *buin* selects as a locative argument a prepositional phrase headed by *do*. This phrase may be extracted.

(6) ‘s ann [do ’n àite so], [a bhuineas sinn ___]

LEWIS

‘s ann do ’n àite so a bhuineas sinn
COP in.3MSG to the place this C.REL belong,REL.FUT 1PL
‘we do belong to this place’ (lit. it is to this place that we belong)

(Oftedal 1956: 281)

Such selectional relations require a local relationship with the relative-clause internal verb, indicating that the extracted element must start out in a lower position.

2.2.2 Predicative Prepositions

Prepositions which occur with the auxiliary *bi* seem to provide most of the content for the predicate. In (7), the prepositional phrase *agam* is clefted while retaining an idiomatic meaning.
Similarly, the use of *air* ‘on’ with *bi* ‘to be’ is used to express various experiences (e.g. thirst, drunkenness, fear, sadness) as well as disadvantage. In (8), the prepositional phrase *orm* ‘on me’ is extracted, with no change in the interpretation of the experiential role of the speaker.

(8) ‘S ann [orm]; [a tha an droch luck ___] 

‘S ann orm a tha an droch luck
COP in.3MSG on.1SG C.REL be.PRES.INDEP the bad luck
‘I certainly have bad luck’ (lit. it is on me that the bad luck is)

(Oftedal 1956: 297)

The use of *aig* ‘at’ with *bi* ‘to be’ expresses possession. In (9), the prepositional phrase *aige* ‘at him’ can be extracted and the possessive meaning is not lost.

(9) ‘S ann [aige]; [a bha ’n sgoth ___] 

‘S ann aige bha ’n sgoth
COP in.3MSG at.3MSG (C.REL) be.PAST the sailboat
‘It was he that had the sailboat’ (lit. it was at him that the sailboat was)

(MacLellan 1972: 7)

Notice that (8) and (9) form a near-minimal pair inside the relative clause, further corroborating the claim that the clefted preposition must be interpreted inside of the relative clause, as expected on a movement derivation. The idiomatic meanings of these prepositions are tied to their functions (and presumably positions) as predicates inside of the relative clause. If these were not derived via movement there would be no reason to expect them to be interpreted this way.
2.3 Subject-Predicate Agreement

Although prepositional inflection is famously not a connectivity effect (cf. Adger and Ramchand (2005) and the inflectional patterns in this paper), there is an agreement pattern which does indicate movement. This agreement pattern occurs in a particular predicative construction where a nominal or nominalized verb predicate is headed by the prepositional particle *ann* ‘in’ (cf. Reed (2012: 202-4)). In (10), the DP subject controls 3PL agreement on *ann* (surfacing as *nan*). The agreement is morphologically identical to a possessive pronoun, and (10) could be read literally as ‘Most of the people here are in their teachers.’

(10) Tha [a’ chuid nas mòtha de na daoine anseo] ‘nan’ tidsearan

This pattern also is found with certain verbs (see discussion in Reed (2012: 246-52)) (11).

(11) Tha [mi] ‘nam sheasamh anns a’ chidsin

This agreement pattern is atypical of agreement inflection in Scottish Gaelic in that agreement co-occurs with i) a full DP subject (10) and ii) an overt pronoun (11). Prepositional inflection does not have this property (see §3.2). What this means is that the subject-predicate agreement is likely a reflex of syntactic Agree (see also Reed (2012: 274-75) for an argument that this is true agreement). As a reflex of a syntactic Agree operation, we expect this full inflection to remain under extraction in an A-bar dependency. This expectation is again borne out. In (12a) the subject is extracted and the predicate retains 1SG inflection.

(12) a. ‘s [mise], [a tha nam sheasamh anns a’ chidsin]

b. ‘s ann [nam sheasamh], [a tha mi ‘sa chidsin]
Perhaps even more convincing is (12b), where the clefted predicate retains the 1SG inflection from the subject. Because Agree requires a local structural relation, (12) indicates that the clefted element must originate inside the relative clause.

2.4 Reconstruction Effects

In this section I show that A-bar dependencies reconstruct for three types of binding phenomena: Condition C violations, variable binding, and reciprocals. All three are widely understood to require a local c-command relation. The fact that this syntactic requirement underlies all three interpretive effects, and that these hold under extraction, provides strong evidence that A-bar dependencies are created via movement in these dialects.

2.4.1 Condition C

The ungrammaticality of (13a) is explained by Condition C: R-expressions cannot be bound. Extracting the prepositional phrase containing the R-expression does not result in a grammatical utterance (13b). The ungrammaticality of (13b) follows if at the relevant stage of the derivation the R-expression Calum is bound.

(13) a. *Dh’eist e, ris an sgeulachd mu Chalum; UIST

*Dh’eist e ris an sgeulachd mu Chalum
listen.PAST 3MSG to.DEF the story about Calum
‘He listened to the story about Calum.’

b. *Dè an sgeulachd mu Chalum; ris an do dh’eist e, ?

*Dè an sgeulachd mu Chalum ris an do dh’eist e,?
what the story about Calum to.DEF C.REL listen.PAST.DEP 3MSG
‘Which story about Calum did he listen to?’ (ok if he ≠ Calum)

2.4.2 Variable Binding

Quantified noun phrases, such as a h-uile mathair ‘every mother’ in (14a), can bind a pronominal variable, aice ‘her (lit. at her)’ in (14a). Following Büring (2010: 90-1) (also Reinhart (1983: 112ff.)), quantified noun phrases cannot be coindexed with a variable without also c-commanding that variable. Thus there is a syntactic requirement on the interpretation of the variable aice as covarying with a h-uile mathair. This syntactic requirement is met in (14a). This covarying interpretation is available when the DP containing the variable is extracted (14b).

(14) a. Tha gràdh aig a h-uile mathair; air an nighean aic’;

Tha gràdh aig a h-uile mathair air an nighean aic’.
be.PRES love at every mother on the daughter at.3FSG
‘Every mother loves her daughter’

For the purposes of binding, the prepositions here act essentially as case-markers, allowing binding out of their complement.
2.4.3 Reciprocals

Reciprocals such as *a cheile* ‘each other’ must be bound by a local antecedent. This is the case in (15a). When the prepositional phrase containing *a cheile* is clefted, as in (15b), the result is still grammatical, indicating, again, that at the relevant level of representation, *a cheile* is in a position bound by the plural subject *Mairi is Anna.*

(15) a. Tha [Anna is Mairi]; a’ coinneachadh ri a cheile; an-diugh 
   Tha Anna is Mairi a’ coinneachadh ri a cheile an-diugh
   be.PRES Anna and Mary PROG meet.VN to each other today
   ‘Anna and Mary are meeting each other today’

b. ‘S ann ri a cheile; a tha [Mairi agus Anna]; a’ coinneachadh ___ an-diugh
   ‘S ann ri a cheile a tha Mairi agus Anna a’
   COP in.3MSG to each other C.REL be.PRES Mary and Anna PROG
   coinneachadh an-diugh
   meet.VN today
   ‘It’s each other that Mary and Anna are meeting today’

The preservation of ungrammaticality in the case of Condition C violations (13), the availability of a bound reading with quantified noun phrases (14), and the grammaticality of clefted reciprocals (15) alone each indicate a movement strategy. Together, they provide strong evidence that A-bar dependencies in these dialects are formed via movement.

2.5 Summary

In this section I presented a range of data which support a movement analysis of A-bar dependencies in the dialects of Lewis and Uist. Morphosyntactically, we see the displacement of the preposition, indicating pied-piping (i.e. movement). Syntactically, selectional relations between the verb and a clefted prepositional phrase (§2.2.1), agreement (§2.3), and c-command relations (§2.4) necessitate the base-generation of the extracted element inside the relative clause. Semantically, the interpretation of certain prepositions (§2.2.2), R-expressions (§2.4.1), variables bound by quantifiers (§2.4.2), and reciprocals (§2.4.3) requires that the extracted element be interpreted inside the relative clause.

I would also like to point out that the two forms of the relative complementizer, *a* and *an*, do not correspond with a difference in the formation of these dependencies. Dependencies formed with both *a* and *an* reconstruct.
Finally, although I consider the weight of the data presented here to be wholly convincing, I will end this section with a brief discussion of some of the problematic non-connectivity ('non-identity') effects which Adger and Ramchand (2005) presented as arguments against a movement analysis, and which hold for these dialects. Prepositional agreement is invariant for these dialects (and this, of course, is the focus of this paper), and the case on the pivot comes from the matrix clause, not from its position inside the relative clause. Both of these are, however, relatively common across languages, and I do not consider either to be fundamentally problematic. A third non-identity effect has to do with idiom reconstruction. Additional idioms were difficult to find for elicitation, but it does seem that at least some idioms do not reconstruct; again, this is something that is not unique to Scottish Gaelic, and further research must be done to see how idioms generally behave with movement. The fourth non-identity effect reported in Adger and Ramchand (2005) has to do nominally with selection and involves the subject-predicate agreement construction discussed in §2.3 above. This construction, when it involves a nominal predicate, is baffling in its behavior in extraction contexts: the subject cannot be extracted, and when the predicate is extracted the structure of the relative clause seems to change. This is truly a challenge for a movement account, but pending a complete syntactic analysis of the construction, I am happy to leave it aside.

I conclude that these dialects derive their A-bar dependencies through movement. This, however, makes the puzzle of inflection on the fronted preposition more puzzling: if the pivot is complement to the preposition at some point, why isn’t the inflection sensitive to its properties, and why are there two types of inflection involved in A-bar dependencies?

3 Relevant Morphosyntactic Facts

Because prepositional A-bar dependencies and the inflection on the preposition are at the heart of the puzzle of invariant inflection, I briefly outline the relevant facts about the Scottish Gaelic complementizer system and prepositional inflection (both \(\phi\)-inflection and definite inflection) before returning to the two patterns of inflection.

3.1 The Scottish Gaelic complementizer system and verb forms

Scottish Gaelic has a rich complementizer system, with complementizers encoding the presence (or absence) of A-bar dependencies and negation (Adger and Ramchand 2005). Complementizers condition the form of the finite verb. This is summarized in Table 1. Because it is often dropped in speech, the form of the verb provides crucial information about the form of the relative complementizer. This is in turn useful for identifying the 3MSG vs. DEF-fronting strategies when the form of the preposition fails to distinguish between the two.

The INDEPENDENT form of the verb is found in matrix clauses and, in all tenses but the future, following the relative complementizer \(a\), as in (16).

\[
\begin{array}{llllll}
\text{man} & \text{young} & \text{be.PAST} & \text{look.VN} & \text{for employment} \\
\text{duin’ òg} & \text{a} & \text{bha} & \text{coimhead} & \text{airson} & \text{cosnadh}
\end{array}
\]

‘a young man [who was] seeking employment’ (Shaw 2007: 6)
<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>COMP</th>
<th>VERB FORM</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
<td>independent</td>
</tr>
<tr>
<td>Relativizing</td>
<td>a</td>
<td>independent, relative</td>
</tr>
<tr>
<td></td>
<td>an</td>
<td>dependent</td>
</tr>
<tr>
<td>Plain Subordinating</td>
<td>gun</td>
<td>dependent</td>
</tr>
<tr>
<td>Negative</td>
<td>nach</td>
<td>dependent</td>
</tr>
<tr>
<td>Polar Interrogative</td>
<td>an</td>
<td>dependent</td>
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<tr>
<td>Negative Matrix</td>
<td>cha</td>
<td>dependent</td>
</tr>
</tbody>
</table>

Table 1: Complementizers’ Effect on Verb Form

There is also a distinct RELATIVE FUTURE form of the verb, found only on future verbs in the context of the relative complementizer a (17). This form is identifiable by the -(e)as/-(i)os suffix.

(17) a h-uile biadh a bhios sinn a’ gabhail anns an taigh all food C.REL be.FUT REL we PROG eat.VN in.DEF the house
‘all the food that we’ll be eating in the house’ (Oftedal 1956: 277)

The DEPENDENT form of the verb is found in all other contexts where an overt complementizer appears: with the an form of the relative complementizer (18a), the plain subordinating complementizer gun (18b), and subordinating negation nach (18c), as well as with matrix negation and the polar interrogative particle an.

(18) a. Bha dusgadh anns na h-eaglaisean ann seo air an be.PAST awakening in.DEF the.PL church.PL EXIST DEM on C.REL robh “an tuiteam” aca.
be.PAST.DEP the falling at.3PL
‘There was a revival in the churches here which they called ‘the falling’.’
(Oftedal 1956: 265)

b. Chaidh sgeul timchioll a’ bhaile gun robh Roddy air go.PAST story around the town that be.PAST.DEP Roddy PERF a iompachadh
3MSG convert.VN
‘The story went around the village that Roddy had converted himself.’
(Oftedal 1956: 265)

c. C’airson nach eil thu ride-igeadh an asal?
why C.NEG be.PRES.DEP 2SG ride.VN the donkey
‘Why aren’t you riding the donkey?’
(Oftedal 1956: 267)

I assume there is no deep significance to the different verb forms, but that the verb form is triggered by a particular relation between the verb and C\(^0\) head; whether this is a selectional or a configurational relationship is not relevant for my analysis.
3.2 Prepositional Inflection

Scottish Gaelic prepositions can be divided into two major classes: inflecting and non-inflecting prepositions, depending on whether the preposition changes form for a (null) pronominal complement (cf. Acquaviva (2003) for Irish). For non-inflecting prepositions, pronouns are overt and surface in the possessive form. The majority of inflecting prepositions change form in the presence of a set of determiner-like elements. These definite-inflecting prepositions can be further subdivided into two classes depending on the shape of definite inflection. This is summarized in Table 2.

<table>
<thead>
<tr>
<th>BARE</th>
<th>NON-INFLECTING</th>
<th>Φ-INFLECTING</th>
<th>INFLECTING</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>CLASS I</td>
<td>CLASS II</td>
<td>CLASS III</td>
</tr>
<tr>
<td>BARE</td>
<td>os cionn</td>
<td>aig</td>
<td>fo</td>
</tr>
<tr>
<td>3MSG</td>
<td>os a chionn</td>
<td>aige</td>
<td>fodha</td>
</tr>
<tr>
<td>DEF</td>
<td>os cionn</td>
<td>aig</td>
<td>fon</td>
</tr>
<tr>
<td>GLOSS</td>
<td>‘over’</td>
<td>‘at’</td>
<td>‘under’</td>
</tr>
</tbody>
</table>

Table 2: Preposition Classes

3.2.1 Class I: non-inflecting prepositions

Non-inflecting prepositions are typically complex, comprised of a preposition-like particle and a nominal-like component, illustrated in Table 3. Many are synchronically decomposable into prepositions and nouns, as with *ri taobh* ‘beside’, literally “to [x’s] side” and *air beulaibh* ‘in front’, literally “on [x’s] front”, but some are fossilized, as with *mu deoghainn* ‘about, concerning’.

<table>
<thead>
<tr>
<th>P</th>
<th>N</th>
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<tbody>
<tr>
<td>mu</td>
<td>deoghainn</td>
<td>‘about’</td>
</tr>
<tr>
<td>as</td>
<td>deidh</td>
<td>‘behind, after’</td>
</tr>
<tr>
<td>ri</td>
<td>taobh</td>
<td>‘beside’</td>
</tr>
<tr>
<td>air</td>
<td>beulaibh</td>
<td>‘in front’</td>
</tr>
<tr>
<td>air</td>
<td>cul</td>
<td>‘behind’</td>
</tr>
<tr>
<td>os</td>
<td>cionn</td>
<td>‘above’</td>
</tr>
</tbody>
</table>

Table 3: Class I: Non-inflecting Prepositions

These prepositions typically assign genitive case to their objects (19a). Pronominal objects surface as possessive pronouns on the nominal component (19b).

(19) a. *mu deoghainn* nam Béantaichean Gorma the.PL.GEN mountain.PL blue.PL
    ‘about the Blue Mountains’ (Shaw 2007: 46)
Non-inflecting prepositions show no variation in form for either the $\phi$-features or definiteness of their complements.

3.2.2 Class II: $\phi$-inflecting prepositions

The prepositions in classes II-IV are morphologically simple and assign dative case to their nominal complements (20).

(20) \[ \text{aim} \quad \text{an} \quad \text{taigh} \]
\[ \text{at} \quad \text{the.DAT} \quad \text{house} \]
‘at the house’

With pronominal complements, these prepositions surface in an inflected form, and the pronoun is obligatorily null (cf. McCloskey and Hale (1984) for the corresponding Irish data).

(21) \[ \text{aige} \quad (*)e \]
\[ \text{at.3MSG} \quad \text{him} \]
‘at him’

Class II prepositions inflect only for the phi-features of a pronominal complement. There are only two prepositions in this class: \text{air} ‘on’ and \text{aim} ‘at’.

3.2.3 Class III: definite-inflecting prepositions (-n exponent)

Class III prepositions inflect for a (null) pronominal complement like Class II prepositions, and also inflect for complements headed by the singular definite article and \text{a h-uile} ‘all’.\footnote{For further discussion of this class, and class IV prepositions, see Robinson (2009).}

Class III prepositions are identifiable by an -n definite suffix, and the definite article may be omitted altogether (22b).\footnote{This is in fact also true with the relative complementizer \text{an}, which tends to be elided altogether after a Class III preposition.}

(22) a. \[ \text{do} \quad \text{a} \quad \text{mhadhair} \]
\[ \text{for} \quad \text{3MSG.POSS} \quad \text{mother} \]
‘for his mother’

b. \[ \text{do\text{'}n} \quad \text{each} \]
\[ \text{for.DEF} \quad \text{horse} \]
‘for the horse’
Although historically derived from the definite article itself (thus the common orthographic convention of writing ‘n), the -n exponent is not synchronically derived from the definite article. I briefly recount Robinson’s (2009) arguments here, using (23) as an illustration. In (23) the definite article is not omitted, indicating that the process yielding the -n suffix is morphological, not phonological. Additionally, the a’ form of the definite article cannot straightforwardly give rise to the -n suffix if this is a phonological phenomenon.

(23) Stocainn beag [don] a’ chloinn’ aig an taigh
stocking little for.DEF the.DAT.F children.DAT at the house
‘Little stockings for the children at home’ (Dorian 1978: 179)

The determiner a’ still triggers the definite form of the preposition, and the definite preposition may co-occur with the definite article, indicating that this is not a phonological process. Additionally, not all determiner-like elements trigger this inflection. Possessive pronouns, for instance, do not co-occur with the definite form, despite being determiner-like (22a). This indicates that the mechanism by which these definite forms surface is a morphological or morphosyntactic one. I conclude with Robinson (2009) that the inflection on these prepositions comes from a morphological, or possibly morphosyntactic, process, rather than a purely phonological one.

3.2.4 Class IV: definite-inflecting prepositions (-s exponent)

Like the previous two classes, the prepositions of class IV inflect for the φ-features of null pronominal complements. This class has a definite form conditioned by a larger set of determiner-like elements than Class III. This set includes the singular definite article and a h-uile ‘all’ (cf. Class III), as well as the plural definite article (24b) and gach ‘each, every’ (24c).

(24) a. [ann an] dìnan beag
   in pile small
   ‘in a little pile’

b. [anns] na faclairean
   in.DEF the.PL word.PL
   ‘in the words’

c. [anns] gach dòigh
   in.DEF each way
   ‘in every way’

d. [anns] a h-uile dòigh
   in.DEF every way
   ‘in every way’

3.2.5 Summary

The classes of prepositions are schematized in (25). There is a systematic relation between φ-inflection and definite inflection: the availability of definite inflection is dependent on the availability of φ-inflection.
I now return to the patterns of inflection that are the focus of this paper. Recall that there are two fronting patterns available in Lewis and Uist, one of which involves a 3MSG-inflected preposition, with the a form of the relative complementizer and the independent/relative form of the verb (26).

(26) C`o ann a chuir thu an uabhal?

C`o ann a chuir thu an uabhal?

who in.3MSG C.REL put.PAST.INDEP you the apple

‘What did you put the apple in?’

The second pattern, the DEF-fronting pattern (27), involves a definite-inflected preposition and the relative complementizer an, which conditions the dependent form of the verb.

(27) am bucas dhan an do chuir mi na h-uabhlan

am bucas dhan an do chuir mi na h-uabhlan

the box to.DEF C.REL put.PAST.DEP I the.PL apple.PL

‘the box that I put the apples in’

I will argue that these two patterns can be derived from the way copies of movement are treated in the morphological component. Briefly, when the copy is head-sized we find the 3MSG-fronting pattern and when the copy is phrase-sized we find the DEF-fronting pattern. I propose that certain features associated with DP are inserted after syntax to preserve the structural information in the copy. First, however, I discuss my theoretical assumptions and motivate the claim that inflection cannot come from the usual sources.

4.1 Analytic Background

In this section I briefly review the copy theory of movement and the post-syntactic operations of Distributed Morphology, both of which I assume in my analysis. I also provide an account of preposition inflection in Scottish Gaelic, as this is also relevant to my analysis.
4.1.1 The Copy Theory of Movement and the realization

I assume, following Chomsky (1995), that movement chains involve copying and re-merging the element higher in the structure. Thus in any movement dependency there are at least two copies, one of which is deleted before spell-out. There seems to be a strong cross-linguistic tendency for the highest copy to be spelled out.

\[(28) \ [_{CP} \text{DP} \ [_{C^\prime} \ [_{TP} \ldots \text{DP}]])\]

This captures very neatly the connectivity effects seen in A-bar dependencies: the element at the foot of the dependency is exactly the same as the element at its head.

4.1.2 Distributed Morphology

I assume that the structure created in the syntax can be manipulated by a small set of post-syntactic operations. This is provided by Distributed Morphology, a theory of the syntax-morphology interface where the process of word-formation continues throughout the derivation (Halle and Marantz 1993). After syntax, several morphological operations may apply to the still-hierarchical structure. Then the phonological exponents of the structure are inserted, and the structure is linearized. After the hierarchical structure is linearized, additional morphological operations may apply. The default assumption, however, is that the structure received from the syntax is unaltered. three morphological operations will figure in my analysis, and I discuss them here: m-merger, feature copying, and feature insertion.

I adopt Matushansky’s (2006) conception of m-merger. M-merger is simply adjunction of two adjacent heads. This can help derive possessive pronouns in English. Possessive structures are headed by a determiner with a possessive meaning, typically ‘s (e.g. Phaedra’s book). Pronominal possession lacks this exponent. This may be explained by m-merger of the possessive determiner with the pronoun in its specifier (29).

\[(29) \text{DP} \quad \Rightarrow \quad \text{DP} \quad \text{(Matushansky 2006: 86-7)}\]

M-merger feeds the operation of Fusion (Matushansky 2006: 87), which turns the two nodes into one for the purposes of vocabulary insertion (i.e. providing phonological content to the structure). In (29), the complex D-head will fuse, and the vocabulary will provide our. I will gloss over this detail below, but assume it.

Feature copying mimics agreement; a formal definition is given in (30).

\[(30) \text{Feature copying: A feature present on a node X in the narrow syntax is copied onto another node Y at PF. (Embick and Noyer 2007: 309)}\]

Features may also be introduced after syntax.
(31) **Feature introduction:** A feature that is not present in narrow syntax is added at PF. (Embick and Noyer 2007: 309)

Introduced features, because they are introduced late in the derivation, are not necessary for interpretation (Embick and Noyer 2007: 309). Feature introduction has also been proposed to be constrained to only unmarked feature values (Noyer 1998).

4.1.3 A Morphological Account of Prepositional Inflection

Previous analyses of prepositional inflection in Scottish Gaelic have been primarily morphological (Adger (1997), Robinson (2009)). I provide a sketch of an analysis here loosely following Robinson (2009), as it will be useful in understanding the account of inflection in A-bar dependencies given below. For a fully worked-out analysis of inflection, I refer the interested reader to Adger (1997) and Robinson (2009).

Recall phi-inflection occurs only with pronominal arguments and that the pronominal argument is obligatorily null. Phi-inflection comes about via m-merger of the P and D heads. The inflected prepositional forms are inserted in the context of this configuration (boxed in (32)).

\[(32) \quad \text{PP} \quad \Rightarrow \quad \text{PP} \]

\[
\begin{array}{c}
P \\
\downarrow \\
D_\phi \\
\end{array}
\quad \begin{array}{c}
P \\
\downarrow \\
P \\
\downarrow \\
D_\phi \\
\end{array}
\]

Definite inflection comes about via feature copying of a morphosyntactic feature (δ) associated with certain determiners. The definite form of the preposition spells out this δ feature on P (33).

\[(33) \quad \text{PP} \quad \Rightarrow \quad \text{PP} \]

\[
\begin{array}{c}
P \\
\downarrow \\
DP \\
\downarrow \\
D_\delta \\
\downarrow \\
NP \\
\end{array}
\quad \begin{array}{c}
P_\delta \\
\downarrow \\
DP \\
\downarrow \\
D_\delta \\
\downarrow \\
NP \\
\end{array}
\]

At morphological structure, post-syntactic operations work to create the inflection on the prepositions. Pronouns essentially incorporate into the preposition (thus phi-inflection), and a D-related feature is copied onto the preposition (thus definite-inflection). Both operations affect the spellout of the preposition itself and are relatively superficial.

4.2 Whence (Not) Inflection

The puzzle posed by prepositional inflection in these A-bar dependencies goes beyond the puzzle of anti-agreement more generally. Here we have two distinct patterns of inflection; but what is the source of this inflection? Where we find one pattern we cannot sub in the other. The 3MSG-fronting pattern is used in simple who-questions (34a). The DEF-fronting pattern is ungrammatical in this context (34b).
(34)  a. Cò bhuaithe a fhuaír thu an tiodhlac?
who from.3MSG C.REL get.PAST.INDEP you the gift
‘Who did you get the gift from?’ UIST
b. *Cò bhon an d’fhuaír thu an tiodhlac?
who from.DEF C.REL get.PAST.DEP you the gift

And *vice versa*, the DEF-fronting pattern is used in *which*-questions, relative clauses, and clefts (where speakers allow clefting from a prepositional phrase). In such contexts, the 3MSG-fronting pattern is unavailable (35b).

(35)  a. Dè am bocs a anns an do chuir thu an uabhal?
what the box in.DEF C.REL put.PAST.DEP you the apple
‘Which box did you put the apple in?’ UIST
b. *Dè am bocs a ann a chuir thu an uabhal?
what the box in.3MSG C.REL put.PAST.INDEP you the apple

The choice between the two patterns cannot be a sensitivity to the category of the extracted element: cò, *which*-phrases, and nominals are all DPs.

The inflection on the fronted preposition also cannot be directly triggered by the pivot. Cò itself cannot be responsible for the 3MSG inflection on the fronted preposition. The distribution of phi-inflection on prepositions (§3.2 above) is such that it occurs only with null pronouns (of which cò is not). Additionally, for speakers who allow multiple *wh*-questions, the preposition does not inflect at all for the cò object (36).

(36)  Cò a bhruidhneas [ri cò]?

Cò a bhruidhneas ri cò?
who C.REL talk.FUT.REL to who
‘Who will talk to who?’ UIST

Thus 3MSG inflection cannot come directly from the features of cò.

Similarly, in relative clauses, the pivot may be indefinite. In (37) the pivot àite is indefinite (notice the non-inflection on the matrix preposition gu). Despite this, the fronted preposition is in the definite form.

(37)  gu àite anns an tiormaich i

gu àite anns an tiormaich i
to place in.DEF C.REL dry.FUT.DEP 3SG
‘to a place where it [the peat] will dry’ (lit. ‘in which it will dry’) (Oftedal 1956: 271)

11While most speakers I consulted were ok with such questions (in contexts where there are two open variables; in (36) it was a speed-dating context.), a few were not. Adger and Ramchand (2005: 183) report ungrammaticality for multiple *wh*-questions, and McCloskey (1979) for Irish. The University of Arizona Gaelic project reports *in situ* *wh*-phrase with an echo interpretation; these have agreement facts similar to (36).
Definite inflection on the fronted preposition cannot come from the features of the extracted element.

If inflection cannot come from the moved element, it is reasonable to wonder whether inflection comes from the complementizer. This is especially tempting in the case of \( \text{an} \), which has a restricted distribution. I reject such a hypothesis for two reasons. First, \( \text{an} \) is in complementary distribution with \( \text{nach} \), the negative complementizer (38). This indicates i) \( \text{an} \) is a complementizer\(^{12}\) and ii) the complementizer \( \text{an} \) is not responsible for definite inflection since definite inflection is present in the negative relative clause as well.

\[
(38) \quad \text{a. an duine ris an robh thu ag \( \text{\`eisteachd} \) the man to.DEF C.REL be.PAST.DEP you PROG listen.VN} \\
\text{‘the man you were listening to’}
\]

\[
(38) \quad \text{b. an duine ris nach robh thu ag \( \text{\`eisteachd} \) the man to.DEF C.REL.NEG be.PAST.DEP you PROG listen.VN} \\
\text{‘the man you weren’t listening to’} \quad \text{LEWIS (Adger and Ramchand 2006: 9)}
\]

Second, \( \text{an} \) shows up in other A-bar contexts where it more clearly looks like a complementizer, such as in (39), where \( \text{an} \) (by convention, orthographically represented as \( \text{am} \), showing nasal place assimilation) heads the relative clause.

\[
(39) \quad \text{C`aite am bheil thu a’ dol?} \\
\text{where C.REL be.PRES.DEP you PROG go.VN} \\
\text{‘Where are you going?’}
\]

The inflection on the fronted preposition does not come from the pivot, nor from the complementizer. In the next section I present additional data from which we can make a generalization about the two patterns, leading to an analysis of the data.

4.3 A Sub-Puzzle and a Generalization Emerges

What I said above about \( \text{c`o} \) and the DEF-fronting pattern was slightly misleading. There is one context where the DEF-fronting pattern can be used with \( \text{c`o} \), and that is when \( \text{c`o} \) is modified by \( \text{eile} \) ‘other’ (40a).\(^{13}\) Interestingly, the 3MSG-fronting pattern can be used when \( \text{c`o} \) is modified by \( \text{eile} \), but only if \( \text{eile} \) is stranded in the complement of the preposition (40b). This alternation is somewhat marginal in the language, in that of the pair in (40), (40a) is preferred and available for all prepositions and (40b) is not very productive.\(^{14}\)

\[
(40) \quad \text{a. Co \underline{[eile]} aig am bheil car? DEF-FRONTING, LEWIS} \\
\text{Co eile aig am bheil car?} \\
\text{who else at C.REL be.PRES.DEP car} \\
\text{‘Who else has a car?’}
\]

\(^{12}\)See McCloskey (2001) for a similar argument regarding Irish \( \text{a}^L \) and negation in the C-system.

\(^{13}\)Although \( \text{aig} \) does not have a definite form, this is clearly the DEF-fronting, signalled by the \( \text{an} \) form of the relative complementizer, and the dependent form of the verb.

\(^{14}\)Incidentally, the pattern in (40b) is the only one available in Irish (McCloskey 2004: 4).
b. Cô [aige eile] a tha car?

I assume *eile* is a DP adjunct (with evidence from its rightward position in the DP), although the structure of the Scottish Gaelic nominal and the position of *eile* has yet to be fully worked out (cf. discussion of *eile* in Irish in McCloskey (2004: 4-5)).

We find the 3MSG-fronting pattern where *eile* is stranded with the preposition, and we find the DEF-fronting pattern when *eile* moves along with *cò*. The structures for each of the pair in (40) above are given in (42). I assume that the extracted element exits the CP altogether, and focus only on the CP-internal structure here.

The difference between the 3MSG-fronting structure in (42a) and the DEF-fronting structure in (42b), aside from the prepositional inflection and form of the complementizer, is only in
the structural size of the copy. In (42a) the copy is simply a head, and in (42b) the copy is the entire DP.

Returning to the original patterns, we see that this is clearly the case for those as well. In (43) the simple *wh*-question with the 3MSG-fronting pattern shows, unsurprisingly, the same pattern as above: the copy is simply a head.

(43)

\[
\text{CP} \quad \text{PP} \quad \text{P}_{3\text{MSG}} \quad \text{DP} \quad \text{C} \quad \text{TP} \quad \text{a} \quad \text{fluair thu an tiodhlac} \quad \text{bhuaithe} \quad \text{c} \quad \text{o} \quad \text{fhuair thu an tiodhlac?}
\]

Who from.3MSG C.REL get.PAST.INDEP you the gift

‘Who did you get the gift from?’

And in the DEF-fronting pattern, the copy left behind is a full DP (44).

(44)

\[
\text{CP} \quad \text{PP} \quad \text{P}_{DE\text{F}} \quad \text{DP} \quad \text{C} \quad \text{TP} \quad \text{an} \quad \text{boireannaich} \quad \text{bhuaithe} \quad \text{c} \quad \text{o} \quad \text{fhuair mi an tiodhlac} \quad \text{bhuaithe} \quad \text{c} \quad \text{o} \quad \text{get.}
\]

the.PL women from.DEF C.REL get.PAST.DEP 1SG the gift

‘the women I got the gift from’

When the moved element is minimal (i.e. a head), we find the 3MSG-fronting pattern. When the moved element is complex, we find the DEF-fronting one. This generalization is schematized in (45).

(45) \[ \text{P } \text{D} \rightarrow \text{P}_{3\text{MSG}} \]
\[ \text{P } \text{DP} \rightarrow \text{P}_{DE\text{F}} \]

Morphologically, the copy of a moved head behaves as though it were a pronoun and the copy of a moved phrase behaves as though it were a definite article.
4.4 Analysis

The data is best understood as the morphological effect of the size of the copy left behind by movement. I formalize this by way of morphosyntactic features assigned to the copy at Morphological Structure. The morphology assigns the copy a feature (δ or φ) depending on the amount of structure deleted (i.e. a head or a phrase). This feature assignment feeds the morphological operations conditioning the spellout of the preposition (as outlined in §3.2.6).

The copy of cò, a D head, is treated as if it were a pronoun. I formalize this by way of the feature [φ], assigned to the copy after the syntax. The feature [φ] is shorthand for the relevant property associated with pronouns which licenses their morphological behavior (i.e. the feature or property which allows them to undergo m-merge with the preposition). Feature insertion feeds m-merger, which in turn feeds lexical insertion of the 3MSG form of the preposition. This is schematized in (46).

(46) Syntax ⇒ Feature Insertion ⇒ M-Merger ⇒ Lexical Insertion

\[
\begin{align*}
\text{PP} & \Rightarrow \text{PP} \\
P \downarrow \text{D} & \Rightarrow \text{PP} \Rightarrow \text{PP} \\
\phi & \Rightarrow \text{PP} \\
P + \text{D}_\phi & \Rightarrow \text{PP} \Rightarrow \text{bhauithe}
\end{align*}
\]

When the copy of movement is assigned [φ], this triggers the P+D m-merger, providing the context for insertion of a φ-inflected preposition. The features 3MSG are used either because these are the φ-features associated with cò as a DP; alternatively, these features surface because they are in some sense ‘default’ (cf. Adger and Ramchand (2005)).

The copy of a full DP is treated as if it contained a definite determiner. I formalize this by using the feature [δ], which is present on the determiners which trigger definite inflection. This feature is assigned to the copy at morphological structure, and this feeds feature-copying of δ, which in turn feeds lexical insertion of the definite form of the preposition. This is schematized in (47).

(47) Syntax ⇒ Feature Insertion ⇒ Feature-Copying ⇒ Lexical Insertion

\[
\begin{align*}
\text{PP} & \Rightarrow \text{PP} \\
P \downarrow \text{DP} & \Rightarrow \text{PP} \Rightarrow \text{PP} \\
\delta & \Rightarrow \text{PP} \\
P_\delta \downarrow \text{DP}_\delta & \Rightarrow \text{PP \Rightarrow \text{bhon}}
\end{align*}
\]

The appearance of δ and φ in the morphology does not necessarily represent a syntactic reality of these features in the structure (this is corroborated by the cò eile alternation).

\[15\] The prediction for pronominal pivots depend on the form of the pronoun: bare pronouns are presumably heads, but pronouns are often suffixed with an emphatic marker -sa, which is arguably a DP adjunct. The emphatic marker would make the copy a DP. Unfortunately, my consultants would not form relative clauses on pronouns, and clefts formed on the object of a preposition were generally dispreferred. Further work might shed more light on this.
Rather, these features are a way of spelling out the copies left behind by movement. The idea that copies can be pronounced is not new. However, what is remarkable about the Scottish Gaelic data, and the analysis provided here, is that the copies are spelled out by introducing a feature; other purported spell-outs of copies typically involve impoverishment of a feature. Why Scottish Gaelic should be different in this regard is unclear. However, it is not just any feature that is added, but a feature which logically relates to the copy, and that the $\phi$ and $\delta$ features are simply the best way of reflecting this feature of the copy. It could be that in Scottish Gaelic the structural difference between heads and phrases is important, and $\delta \sim \phi$ reflects this.

Alternatively, there is a sense in which the copy in an A-bar chain is anaphoric to the moved element. Both $\phi$ and $\delta$ are features associated with anaphoric elements (at least elements which are prototypically anaphoric). This might be the property that $\delta \sim \phi$ reflects, in which case the addition of features in the analysis presented here just represents a place to further prove the nature of morphosyntactic features and their relationship to meaning.

5 Conclusion

This paper discussed and analyzed two patterns of invariant inflection, arguing that the copies left behind by movement behaved differently at morphological structure depending on the size of that copy. The analysis presented here contributes to the literature on the spell-out of copies in suggesting that copies may be spelled out differently based on structural differences, and additionally that copies may be augmented with morphosyntactic features.

The paper also has several language-internal implications. The data discussed help to form a more complete picture of the dialect variation in A-bar dependencies started in Adger and Ramchand (2006). I also believe that the analysis proposed here may go some way towards an explanation of the variation. The pronominal element identified in Adger and Ramchand (2005) may be historically derived from the 3MSG spell-out of a copy of a head: if 3MSG is first generalized to all copies (conceivable considering the existence of relative and resumptive pronouns), a learner could reanalyze the spell-out of the copy as a null resumptive pronoun, and begin to form A-bar dependencies via merger (this would probably be helped along by several of the other non-identity effects that Adger and Ramchand (2005) discuss).

The analysis presented here supports morphological accounts of prepositional inflection in Scottish Gaelic, and can go some way in explaining why the subject-predicate agreement in §2.3 is retained in an A-bar dependency while prepositional agreement is not. If prepositional agreement is morphological, and if copies can be present in the morphology to the degree suggested here, then we have a neat explanation for why subject-predicate agreement shows connectivity and prepositional inflection does not. The latter is morphological, and thus sensitive to the morphological spell out of copies; the former is syntactic, and sensitive to syntactic features of the copy.
References

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