On The Role of Linear Order in Portmanteaux

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Abstract The formal study of portmanteaux in recent years has seen a great resurgence. But problematic within these investigations has been the conflation of two fundamentally distinct ideas of what the locality conditions restricting portmanteaux are: structural constituency and linear adjacency. In this paper, the intricacies of the Irish verbal complex are examined. The Irish verbal complex is argued to be constructed simultaneously though morphological Lowering (Embick and Noyer, 2001) and syntactic head-movement. The resulting structure has the special property that it allows us to disentangle linear adjacency from morphosyntactic constituency. What we observe here is that portmanteaux are formed between linearly adjacent nodes, not structurally adjacent ones. In order to account for this, a theory is developed in which Vocabulary Insertion operates over linearized structures, operating from left-to-right or right-to-left. Crucially, while linear adjacency seems to be king in portmanteaux, the system is constructed so as to allow morphosyntactic structure to be present at all stages of the derivation. Thus, Distributed Morphology’s (Halle and Marantz, 1993) slogan of “syntax all the way down” is maintained, but the relevant sense of syntax is one in which post-syntactic processing creates complex structures which mirror the narrow syntax in an imperfect way. Importantly, it is linear, rather than structural, adjacency within these post-syntactic structures which regulates patterns of Vocabulary Insertion.

Keywords morphology · linearization · Vocabulary Insertion · portmanteau · suppletion · Irish

1 Introduction

No matter what theory or subfield of linguistics one works in, questions of locality are consistently to the fore. These questions often take forms like ‘What is the domain for a particular linguistic phenomenon’ or ‘What relations between two linguistic elements are sufficiently local for a particular process to occur?’ Here we will focus on morphological locality. Specifically, we will look at a morphological phenomenon known as ‘portmanteaux.’ While this word was first coined to refer to linguistic objects by Lewis Carroll in his
novel *Through the Looking Glass*, its use specifically in linguistics dates to Hockett (1947). Hockett’s original definition has largely stood the test of time².

(1) **Portmanteau**: (a morph) which belong(s) simultaneously to two (or theoretically, more) morphemes, and have simultaneously the meanings of both.

In other words, we think of portmanteaux as single ‘morphemes,’ i.e., indivisible linguistic ‘chunks,’ which correspond to multiple other ‘morphemes’ which we have reason to believe would be there if the portmanteau were not.

The classical example of a portmanteau, discussed by Hockett, and more recently in Svenonius (2012) and Embick (To Appear), is French *au* [o] ‘to the (MASC, CONS-INITIAL)’. This single, indivisible form corresponds to two independently attested morphemes in the language, namely [a] ‘to’ and le [lə] ‘the (MASC, CONS-INITIAL).’ The ‘chunk’ *au* [o] is not decomposable into [a] or [lə], but also clearly corresponds to both at some level of representation.

The study of portmanteau phenomena is crucial to many modern theories of morphology, especially for all so-called ‘Realization Theories’ (Koening, 1999). A Realization Theory is one which proposes that the syntax does not manipulate anything recognizable as a ‘word.’ Rather, these theories propose that the syntax manipulates abstract feature bundles with no phonological content. But of course, the elements of language do have phonological content, and abstract feature bundles must finally be linked with elements of the phonetic string.

Therefore, all Realization Theories require some kind of process which I call ‘Vocabulary Insertion’ (VI) following the Distributed Morphology literature (Halle and Marantz 1993, 1994; Harley and Noyer 1999, et seq.). Exactly how VI works has been the focus of much research but it seems that an informal understanding of it like (2) is quite common.

(2) **Informal Definition of Vocabulary Insertion**: A process by which morphosyntactic feature bundles are matched with representations which the phonology can manipulate.

A process by which abstract morphosyntactic feature bundles are given phonological content.

Thus, the crucial idea behind Vocabulary Insertion is to provide a representation which is interpretable by the phonological component of the grammar, as purely formal morphosyntactic features are understood to not have any segmental or prosodic content (Zwicky and Pullum, 1986). This process normally involves representations like (3).

(3) `<[F]>` → `/bl@p/`

(3) reads as follows. For some feature `[F]`, VI matches `[F]` with a phonological representation, in this case `/bl@p/`. This can also be talked about using the notion of exponence, or realization. Using these terms, it is said that `/bl@p/ ‘expones’ or ‘realizes’ `[F]`. Here I will follow Distributed Morphology (DM) terminology³ in referring to the left side of representations such as (3) as the ‘morphosyntactic feature bundle.’ Additionally, I refer to the phonological representations on the right side, `/bl@p/ in (3), as ‘Vocabulary Entries,’ or VEs⁴.

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² Although it is worth noting that this term is also used in Carroll’s original sense to refer to what we would now probably think of as ‘phonological blendings.’ Here we’ll focus exclusively on Hockett’s sense.

³ See Harley and Noyer (1999) for an overview.

⁴ These are more traditionally called ‘Vocabulary Items’ in classical DM. Here I follow Arregi and Nevins (2012) by referring to them as Vocabulary Entries, to avoid confusing their acronym, VIs, with that of Vocabulary Insertion.
Portmanteaux are important because they show Vocabulary Insertion in action. A portmanteau can be thought of as a single VE ‘standing in for’ two or more other VEs for which there is independent evidence in a particular language\(^5\). Thus, a portmanteau such as (4c) entails the existence of VEs such as (4a-b).

\[(4)\]

\[\begin{align*}
\text{a. } & <[F_1]> \leftrightarrow /bl@p/ \\
\text{b. } & <[F_2]> \leftrightarrow /tru:p/ \\
\text{c. } & <[F_1] + [F_2]> \leftrightarrow /kiks/ 
\end{align*}\]

Let us examine (4) more closely. (4a) and (4b) show independent VEs in our toy language. (4a) encodes that some feature called \([F_1]\) is exponed by /bl@p/. Likewise, (4b) tells us that another feature, \([F_2]\), is realized by a separate VE /tru:p/.

(4c) is the crucial item for our purposes. What (4c) tells us is that when both \([F_1]\) and \([F_2]\) are present, we do not get the two predicted form /bl@p tru:p/. Instead, we get a totally new form, /kiks/. This form is not decomposable into either /bl@p/ or /tru:p/, but we have evidence that the form /kiks/, at some level of representation, ‘contains’ them both.

This understanding begs the question in (5).

\[(5)\] ‘In what local configuration must two nodes be in in order to be realized as a portmanteau?’

Another way of stating the question in (5) is ‘What do we mean by the addition sign in (4c)?’

To explore this topic, we will examine data from the Irish verbal complex. Irish is a particularly good language to investigate these questions in for a few reasons. First, it demonstrates several different kinds of portmanteaux within its verbal complex. Their interactions, as we will see, are complex and yield important theoretical insights. Second, Irish displays rich dialectal variation, which we will discuss in detail. These patterns of variation are in effect natural experiments which allow us to observe what varies when a single aspect of the system is varied against a constant backdrop. Finally, the proposed morphosyntactic structure for the Irish verbal complex is sufficiently complex that it allows us to separate out two notions which are often conflated in the discussion of portmanteaux: linear adjacency and morphosyntactic constituency.

By examining Irish, we will see that an interesting possible answer to (5) emerges, shown in (6).

\[(6)\] In order for two nodes \(\alpha\) and \(\beta\) to be contained within a portmanteau:

\[\begin{align*}
\text{a. } & \alpha \text{ and } \beta \text{ must be linearly adjacent (Bobaljik, 2012).} \\
\text{b. } & \alpha \text{ and } \beta \text{ must be in the same Extended Projection (Williams, 2003; Merchant, 2015).}
\end{align*}\]

Importantly, the locality conditions in (6) make no reference to morphosyntactic constituency of any kind. This requires a particular understanding of VI in which Insertion operates not over hierarchical structure, but rather over linearized structures. The goal of this paper is to present the motivation for such a theory, as well as in what ways existing morphological theories of Vocabulary Insertion need to be reimagined in order to accommodate this proposal.

We begin in §2, which examines the lower nodes of the clausal spine which contribute to the verbal complex. We start with the lowest nodes, namely the verbal root, \(v\), and T. Discussing the morphological exponents of T will lead us to examine the first portmanteaux of the Irish verbal complex. These are termed ‘synthetic endings,’ following McCloskey and Hale (1984). In §2.1 we examine the data, focusing on the Munster Irish dialects, as these are particularly rich in synthetic endings. I argue that an agreement-based account (McCloskey and Hale, \(^5\) Note that this definition requires fusional case endings, such as in Latin, to not be considered portmanteau, because the abstract feature bundles they realize (case, gender, number) are never realized independently. See Hockett (1947) for a discussion. We will not be concerned with such cases here.
1984; Legate, 1999) of these endings yields more insight than cliticization approaches such as Brennan (2009) and Diertani (2011). But ultimately, I suggest that either approach may be adopted as long as these forms are acknowledged to be best treated as portmanteaux in the sense of Hockett’s definition in (1).

We then move on in §3 to examining the higher functional projections. §3.1 begins by introducing Irish complementizers. The range of elements identified as C since McCloskey (1978) is particularly rich in this language, and these elements are quite active morphologically. In §3.2, we turn our attention to how complementizers enter the verbal complex. I propose, following McCloskey (1996), that this occurs through a process of ‘C-lowering’. Within the range of possible analyses, morphological Lowering (Emwick and Noyer, 2001) is chosen as being the best fit.

Once we have an understanding of how the verbal complex is formed, in §3.3 we turn to a crucial aspect of Irish verbal morphology. Irish has two morphological ‘classes’ of complementizers which I term ‘triggering’ and ‘non-triggering’ complementizers respectively. Morphological class membership does not seem to be reducible to prosodic or morphosyntactic considerations. Rather, class membership seems to be idiosyncratic to particular VEs. Here we will also examine the second portmanteau of the Irish verbal complex: the so-called ‘dependent’ forms.

§4 goes on to present two contemporary theories of portmanteaux. As we will see, the problem with both of these theories is that they make reference to structural notions. The first of these are the ‘Insertion at Non-Terminal Nodes’ theories in §4.1 (Neeleman and Szendrői, 2007; Caha, 2009; Radkevich, 2010). This approach has been criticized recently in Embick (To Appear) and Merchant (2015), and the Irish verbal complex provides additional empirical support against this kind of approach. §4.2 presents a much more promising account of the portmanteaux in the Irish verbal complex: Spanning (Bye and Svenonius 2010; Svenonius 2012; Merchant 2015 inter alia). Spanning does not run into the same problems as Insertion at Non-Terminal Nodes, but crucially it requires that the nodes which make up a portmanteau be structurally defined. This requirement makes the pathological prediction that dependent forms and synthetic endings should not be permitted to cooccur. This prediction is shown to be false in §5.

§6 develops an alternative proposal which draws on on Spanning (Bye and Svenonius 2010; Svenonius 2012; Merchant 2015 inter alia). Unlike Spanning though, this theory has a requirement of linear adjacency, rather than structural constituency, at its core. By making this move, the classic allomorphy typology developed in Bobaljik (2000) must be revisited. I then claim that this has welcome consequences though, and show that some previously troubling Korean data brought to light by Chung (2007) can be understood naturally within this adjacency-based proposal. §7 concludes, and provides some closing thoughts.

2 The Lower Nodes of the Irish Verbal Complex

The lower projections which make up the Irish finite verb are fairly standard from an Indo-European perspective. Verbs consist of a root and tense/mood morphology, which is suffixal on the verbal root. (7) shows a few sample sentences with the verb highlighted and morphologically parsed.

(7) a. **Thabhar -fadh** sé rabhadh dom.

   give -COND he warning to.me

   ‘He would warn me.’

\* Morphological Lowering to account for C-lowering is also put forward in Harley and Noyer (1999) and Oda (2012), although no explicit arguments for choosing this particular formalism are provided.

\* Note that in this paper I will not discuss non-finite forms of Irish verbs, the so-called ‘verbal nouns.’ I will also not distinguish tense and mood. Both are realized as suffixes on the verbal root and are mutually exclusive, suggesting complementary distribution.
b. Ith -eann an fear sin cáca gach lá.
   eat -PRES the man that cake every day
   ‘That man eats cake every day.’

c. Póg -faidh an bhean a fear céile.
   kiss -FUT the woman her husband
   ‘The woman will kiss her husband.’

The primary way of marking tense/mood in Irish is through a series of suffixes, called ‘analytic suffixes’ in the literature (McCloskey and Hale, 1984). The distribution of these suffixes varies dialectally, as will be shown in §2.1, but in all dialects they occur with full DP subjects and in constructions without an overt grammatical subject (McCloskey and Hale, 1984; Legate, 1999).

(8) provides a full table of these suffixes. Note that the conditional and past habitual analytic suffixes are syncretic.

### Irish Tense/Mood Marking

<table>
<thead>
<tr>
<th>TENSE/MOOD</th>
<th>SUFFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>-(e)ann ~ -onn</td>
</tr>
<tr>
<td></td>
<td>[ən]</td>
</tr>
<tr>
<td>Past</td>
<td>-θ</td>
</tr>
<tr>
<td>Future</td>
<td>-f(a)idh</td>
</tr>
<tr>
<td></td>
<td>[i]</td>
</tr>
<tr>
<td>Conditional</td>
<td>-fadh</td>
</tr>
<tr>
<td></td>
<td>[ax] or [u]</td>
</tr>
<tr>
<td>Past Habitual</td>
<td>-adh ~ -odh</td>
</tr>
<tr>
<td></td>
<td>[ax] or [u]</td>
</tr>
</tbody>
</table>

Additionally, there is further evidence that Irish has a morphological realization of v with some verbs, seen in what is traditionally called ‘the second conjugation’ (Acquaviva, 2014). These verbs have a stable suffix -igh [iː], written as -i [iː] before tense endings. This is demonstrated in (9) with some sentences involving the second conjugation verb imigh ‘leave’.

(9) a. Im -i -onn siad gach lá.
   leave -v -PRES they every day
   ‘They leave every day.’

b. D’ -im -igh -θ siad.
   do -leave -V -PAST they
   ‘They left.’

c. D’ -im -i -odh sé ag 8 uair a chlog.
   do -leave -V -PAST,HAB he at 8 o’clock
   ‘He used to leave at 8 o’clock.’

From (9) we observe that the Irish verb minimally incorporates three morphemes: \(\sqrt{\text{ROOT}} \ v \ T\), in this order.

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8 The orthographic ‘I’ in the future and conditional is pronounced as [h] in some dialects.
9 A discussion of the morpheme glossed as do below is provided in §3.3.1.
If the verb undergoes head movement at least to T in the syntax, as proposed by Chung and McCloskey (1987) and McCloskey (1996), this is the order which the Mirror Principle (Baker, 1985, 1988) predicts. This is shown in (10), which parses the verb in (9a) imónn ‘leaves.’

(10)

2.1 A Necessary Excursus into Irish Synthetic Endings

Irish contains a second way of marking tense using the so-called ‘synthetic endings.’ I argue that such endings expone T as well, just like the present analytic suffix -onn in (10). But first, what are synthetic endings?

Synthetic endings are verbal suffixes which express both the φ-features of a pronominal subject as well as tense. There are, broadly speaking, two approaches to the analysis of synthetic endings. The first is an agreement-based approach (Stump, 1984; McCloskey and Hale, 1984; McCloskey, 1986, 2005; Legate, 1999), in which the endings expone finite T in an Agree relation with an obligatorily silent pronoun. The second approach originates in Hale (1987, 1990) and is exemplified more recently in Brennan (2009) and Diertani (2011). These approaches, termed ‘pronoun incorporation’ accounts, propose that these endings do not expone T, but rather are allomorphs of incorporated subject pronouns in the environment of certain featural specifications on T. Ultimately I will favor an Agreement based approach, but it will not really matter for us how T and the subject φ-features end up together, as long as they do.

Now, let us consider some data. As observed in the literature, dialects differ in how many synthetic endings they allow. To see this, consider the tables in (11-12), reproduced from Legate (1999). (11) demonstrates a common Ulster, or northern, Irish variety, which has the smallest inventory for syntactic endings for a given tense. (12) demonstrates a typical West Munster dialect, which has many more.

10 The question of why the pronoun is obligatorily silent is an interesting one which we will not discuss here, as it is outside of our primary focus. See Stump (1984); McCloskey and Hale (1984) and Brennan (2009) for discussion.

11 In these tables, synthetic endings are bolded, while the analytic endings are italicized. Additionally, we will not discuss initial consonant mutations in this paper; this is what is responsible for the stem alternation cuir~chair.
By observing (11-12), we can see that synthetic endings are in complementary distribution with analytic endings and overt pronouns. Furthermore, we can see that synthetic endings are largely suppletive; none of these endings are parseable into one subpart corresponding to tense/mood and another to the $\phi$-features of the subject.

Now, let us turn to the two approaches outlined above in more detail: agreement approaches and pronoun incorporation approaches.

The first of these, the ‘agreement’ based approach, is advocated in McCloskey and Hale (1984); Legate (1999), among others. These accounts analyze the synthetic endings as agreement between a functional projection (identified as T in our current framework) and a silent pronominal. Importantly, this pronominal must be silent, as these forms may never cooccur with an overt pronoun, as shown in (13).

(13) a. Chuir-finn...
    put-1SG.COND
    ‘I would put’

b. *Chuir-finn mé...
    put-1SG.COND I
    Intended: ‘I would put’

Despite the absence of an overt subject, there is good evidence that there is in fact a pronominal present syntactically in constructions like (13a) to act as the target of agreement$^{12}$.

$^{12}$ See McCloskey and Hale (1984) for a thorough presentation of this evidence.
The second line of analysis are the ‘incorporation’ analyses, put forward by Hale (1987, 1990); Ackeman and Neeleman (2003); Brennan (2009); Diertani (2011). In this family of analyses, the synthetic endings are the pronouns, which have incorporated into the verb. This straightforwardly accounts for the distribution in (13), and also for the fact that synthetic endings never cooccurs with a full DP subject, as shown in (14).

(14)  a. Chuir -0 na daoine…
       put -PAST the.PL men
       ‘The men put…’

 b. *Chuir -eadar na daoine…
    put -3PL,PAST the.PL men
    Intended: ‘The men put…’

This is not the place to try to settle this difficult issue, but my discussion will assume and agreement approach for three reasons.

First, incorporation analyses seem to be unable to account for the fact that the silent pronouns in these constructions can be coordinated, as in (15).

(15)  An T Q mbéi -teá pro féin agus bean an tí sásta?
    Q be -2SG.COND pro REFL and woman.of.the.house happy
    ‘Would you and the woman of the house be satisfied?’

Incorporating the pronoun into the verb should violate the Coordinate Structure Constraint (Ross, 1967). This requires Brennan (2009) to stipulate that this incorporation process does not obey the Coordinate Structure Constraint. It seems to me, rather, that these cases are better understood as instances of the well-attested phenomenon of left-conjunct agreement (Gazdar and Pullum 1980, et sequitur), as proposed in McCloskey and Hale (1984).

My second reason for using an agreement analysis is that the incorporation analyses I am familiar with explicitly claim that synthetic suffixes are clitics, particularly Brennan (2009). But by standard criteria (Zwicky and Pullum, 1983), synthetic endings have the properties expected of affixes rather than clitics.

The first is that clitics exhibit a low degree of selection with respect to their hosts. These synthetic suffixes are only possible on finite verbs, indicated a high degree of selection. This patterns with affixes, not with clitics. Second, arbitrary paradigm gaps are more characteristic of affixes than of clitics. A glance back at the tables in (11) and (12) shows that there are, in fact, arbitrary gaps, such as the lack of synthetic forms for the third singular while they are present in the third plural. This again points back to affixhood, which is consistent with an agreement based approach but not with a clitic incorporation account. Third, morphophonological ‘idiosyncrasies’ are more characteristic of affixes than of clitics. In modern terminology, this can be restated as ‘affixes show contextual suppletion, while clitics do not’. Reviewing the tables in (11-12) above, it is clear that these endings are suppletive for tense/mood. Again, this patterns with affixes, not clitics. While these tests are not conclusive, their results mean that the burden of proof that these endings are morphological clitics is on proponents of incorporation accounts. The results, in contrast, fall out naturally from an agreement based account.

My third and final reason for not pursuing existing incorporation approaches is rooted in concerns of parsimony. The issues at stake here are certainly relevant to the discussion to come, so I will go into some detail.

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13 Zwicky & Pullum’s test of ‘idiosyncratic meanings’ seems never to be active in agreement morphology. I know of no cases where, say, a verb shows third plural agreement but is interpreted as first singular. I set the reason for this divide aside for the purposes of the present task.

14 Note that the modern DM literature has recreated this finding, namely in Bobaljik (2012)’s examination of comparative morphology cross-linguistically. What Bobaljik found was that suppletion is only possible within a word, not across XP boundaries (i.e., outside of a morphosyntactic word). This clearly is a novel, and important, restatement of Pullum and Zwicky’s observation discussed here.
Consider the Vocabulary Entries put forward by Diertani (2011) for a subset of the Munster synthetic endings. (16d) is provided by me, but would clearly be what Diertani would have proposed if she had discussed this specific form.

(16) a. \[1SG] \leftrightarrow -im / [PRES]  
   b. \[1SG] \leftrightarrow -finn / [COND]  
   c. \[1SG] \leftrightarrow -eas / [PAST]  
   d. \[1SG] \leftrightarrow -fad / [FUT]  

The important thing that these Vocabulary Entries miss is that synthetic forms are portmanteaux jointly expressing tense/mood and a set of φ-features. In other words, the VEs in (16) require complementary Vocabulary Entries limiting the expression of tense/mood only in these forms, and furthermore, that they must be null in order to rule out profoundly ungrammatical examples like (17).

(17) a. *Cuir -fidh -fir...  
    put -FUT -2SG.FUT  
    Intended: ‘I will put...’  
   b. *Cuir -eann -im...  
    put -PRES -1SG  
    Intended: ‘I put...’  
   c. *Chuir -feadh -finn...  
    put -COND -1SG,COND  
    Intended: ‘I would put...’  

Examples like (17) are severely ungrammatical in all known Gaelic dialects, Irish or Scottish\(^{15}\). In order for Vocabulary Entries like (16) to be workable, they must be supplemented by complementary VEs such as (18), in order to rule out (17). Bear in mind that these ‘null’ VEs would need to be replicated for all of the synthetic endings in (12).

(18) a. <FUT> \leftrightarrow -fidh  
   b. <FUT> \leftrightarrow \emptyset / [1SG, 2SG, 1PL]  
   c. <PRES> \leftrightarrow -eann  
   d. <PRES> \leftrightarrow \emptyset / [1SG, 2SG, 1PL, 3PL]  
   e. <COND> \leftrightarrow -feadh  
   f. <COND> \leftrightarrow \emptyset / [1SG, 2SG, 1PL, 3PL]  

This clearly misses an important generalization. Therefore, I propose that synthetic forms are best analyzed as portmanteaux, with VEs along the lines of (19).

(19) a. \(<T\):PRES + 1SG \leftrightarrow -im \hspace{1cm} \text{Synthetic Ending}  
   b. \(<T\):PRES \leftrightarrow -eann \hspace{1cm} \text{Analytic Ending}  
   c. \(<T\):COND + 1SG \leftrightarrow -finn \hspace{1cm} \text{Synthetic Ending}  
   d. \(<T\):COND \leftrightarrow -feadh \hspace{1cm} \text{Analytic Ending}  

\(^{15}\text{One possible confound to this position is the orthographic ‘f’ [∅~h], argued by some (Acquaviva, 2014) to be an independent morpheme. We can reasonably set this point aside for our purposes though, as (17a, 17c) are equally as ungrammatical as (17b).}\)
e. \(<T: \text{FUT} + 1\text{SG}> \Leftrightarrow \text{-fead} > f. \:<T: \text{FUT}> \Leftrightarrow \text{-fidh}>\)  

*Synthetic Ending*  
*Analytic Ending*  

Given (19), we understand immediately the impossibility of (17). I leave for another occasion the question of how the \(\phi\)-features, by agreement or incorporation, enter the verbal complex. What matters for our present purposes is the conclusion that synthetic endings are portmanteaux and that they expone T.

In fact, there is further empirical evidence that these synthetic endings expone T. There is a set of verbs which are irregular\(^{16}\) by tense, as seen in (20)\(^{17}\).

(20)  

**Suppletive Irish Verbs for Tense**

<table>
<thead>
<tr>
<th>ROOT</th>
<th>MEANING</th>
<th>TENSE</th>
<th>SUPPLETIVE STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>abair</td>
<td>‘say’</td>
<td>PRES</td>
<td>deir</td>
</tr>
<tr>
<td>/abwax/</td>
<td></td>
<td>FUT</td>
<td>/d̂aw/</td>
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<td>déar-</td>
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<td></td>
<td></td>
<td></td>
<td>/d̂awɔ/</td>
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<tr>
<td>beir</td>
<td>‘catch, give birth to’</td>
<td>PAST</td>
<td>rug</td>
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<tr>
<td>/b/ev/</td>
<td></td>
<td>FUT</td>
<td>/t̂u@g/</td>
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<td>clois</td>
<td>‘hear’</td>
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<td>fós-</td>
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<td>/iɔsɔl/</td>
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<td>tabhair</td>
<td>‘give’</td>
<td>PRES, PAST</td>
<td>tag</td>
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<td>rach-</td>
</tr>
<tr>
<td>/tejɔ/</td>
<td></td>
<td></td>
<td>[r̃ax]</td>
</tr>
</tbody>
</table>

The important thing about such irregular stems is that they readily occur with the synthetic endings under discussion here. This is exemplified by some of the forms of abair ‘say’ in (21), and tar ‘come’ in (22). These

\(^{16}\) I am purposefully vague here, as I do not want to comment on the debate about the existence of readjustment rules. See Haugen and Siddiqi (2013a) and Merchant (2015) *inter alia* for important critiques of the theory of readjustment rules though.

\(^{17}\) Note that only verbs which do not undergo the dependent/independent alternation are provided in this list, including the ‘secret dependents’ discussed in Oda (2012). Additionally note that alternations in length and stem-final depalatalization are not a part of the regular verbal phonology of Irish; these changes are unpredictable in verbs, and therefore I list these stems as separate. This is necessary regardless of whether one wants to treat these changes formally as suppletion or application of a readjustment rule. I do not take a stand on this issue one way or another with these verbs. Finally, the IPA transcriptions below are intentionally broad, to abstract away dialectal variation.
forms are from Corca Dhuibhne Irish (Ó Sé, 2000), but the pattern is completely general across dialects. (21c-d) and (22d-e) show these forms occurring with the appropriate analytic suffix.

(21)  
\[ abair 'say' \]
  a. deir -im say.PRES -1SG.PRES 'I say'
  b. d é ar -f ad say.FUT -1SG.FUT 'I will say'
  c. deir -eann sé say.PRES -PRES he 'he says'
  d. d é ar -f aidh sé say.FUT -FUT he 'he will say'

(22)  
\[ tar 'come' \]
  a. tag -aim come.PRES -1SG.PRES 'I come'
  b. th á in -i os come.PAST -1SG.PAST 'I came'
  c. tioc -fad come.FUT -1SG.FUT 'I will come'
  d. tag -ann sé come.PRES -PRES he 'he comes'
  e. tioc -faidh sé come.FUT -FUT he 'he will come'

Examples like (21-22) are important because they show that the same tense-sensitive allomorphy is triggered equally by a synthetic endings (21a-b, 22a-6) and by analytic endings (21c-d, 22d-e). This is straightforwardly captured if synthetic and analytic endings equally expone T.

A second possibility is that T itself is contained within these irregular stems. This would be done with VEs such as in (23).

(23)  
\[ a. \sqrt{\text{SAY} + v + T: \text{PRES}} \Leftrightarrow \text{deir} \]
\[ b. \sqrt{\text{SAY} + v + T: \text{FUT}} \Leftrightarrow \text{déar-} \]
\[ c. \sqrt{\text{COME} + v + T: \text{PRES}} \Leftrightarrow \text{tag} \]
\[ d. \sqrt{\text{COME} + v + T: \text{PAST}} \Leftrightarrow \text{tháinig} \]
\[ e. \sqrt{\text{COME} + v + T: \text{FUT}} \Leftrightarrow \text{tioc-} \]

The problem with VEs such as (23) is that they make the wrong prediction about the occurrence of synthetic endings. Assuming VEs such as (19) are correct, (23) predicts that synthetic endings should not be possible with those irregular stems. This is because both the VEs involved, that for the synthetic ending and that for the irregular verb stem, contain T:PAST. As we expect terminal nodes to be exposed once, T:PAST would be ‘consumed’ within the irregular verb stem. This blocks a synthetic ending from occurring, because (19) claims that synthetic endings also contain T:PAST. This prediction is clearly false, as seen above in (21-22).

Therefore, I propose that T is best analyzed as contained within the synthetic ending. T triggers allomorphy as normal; the fact that it is contained within a portmanteau has no bearing\(^\text{18}\). Given these assumptions, we will have the maximally simple VEs in (24) for irregular stems.

(24)  
\[ a. \sqrt{\text{ROOT}, v} \Leftrightarrow /\text{t\'ag/ tag-} / \_ \_ \_ \_ \text{T: PRES} \]
\[ b. \sqrt{\text{ROOT}, v} \Leftrightarrow /\text{tháinig/ tháinig} / \_ \_ \_ \_ \text{T: PAST} \]

\(^\text{18}\) See also Merchant (2015) for this point.
On this view, irregular stems are contextual allomorphs triggered by tense features on T, which may originate either in a portmanteaux (a synthetic ending) or from an analytic ending. All of this means that a verbal complex (25) is proposed to have minimally the structure in (26).

(25) ... air -igh-eas ... sense -v -1SG.PAST

'I sensed...' *Ua Laoghaire 1907, chapter 2

(26) T:1SG, PAST

Now that we understand the nodes which make up the lower functional field, let us not turn to the higher functional field.

3 The Higher Functional Projections

Irish is particularly rich in morphologically overt functional projections above T/Infl, and there is a substantial research tradition to draw on in understanding this ‘higher field.’ Here I will present some of the most recent thinking about these projections, drawing largely on McCloskey (1996, 2009, 2011); Elfner (2011); Oda (2012) and Acquaviva (2014).

We begin with complementizers, since we need a proper comprehension of them to understand the rest of the morphology of the left edge of the Irish clause. §3.1 begins by introducing the complementizers (McCloskey, 1978), as well as the arguments from McCloskey (2002) that these morphemes are best treated as C. §3.2 then changes gears, focusing on how C enters the verbal complex. Drawing on work from McCloskey (1996) and Oda (2012), I propose that this is done via a process called C-lowering, where complementizers lower to the position of the finite verb. I formalize this using morphological Lowering, as proposed in Embick and Noyer (2001).

Once we understand C-lowering, we will turn our attention in §3.3 to another crucial aspect of the C-system in Irish. Irish complementizers must be divided into two morphological classes which I term the ‘triggering complementizers’ and the ‘non-triggering complementizers.’ A grasp of these two classes of complementizers is critical to any understanding of Irish verbal morphology.

We begin, though with the syntax of verb placement. It is established that finite verbs do not raise to C (McCloskey 1996; Roberts 2005 *inter alia*), but rather to a functional head which is (just) below C, but high in the inflectional layer, yielding VSO order. Much recent work argues that this position is a Polarity head, referred to as Pol (McCloskey 2009, 2011; McCloskey et al. 2014; Elfner 2011 *et seq.*). Pol immediately dominates T, and finite verbs undergo syntactic head-movement to it. We will not be overly concerned with Pol, as it never has an overt morphological realization, but instead I will simply assume its existence in order for this account to be compatible with this syntactic theorizing.

Thus, we update (26) slightly. This is shown in (27).
Given this, we can turn to the complementizers.

3.1 Introduction to Complementizers

There is a great deal of work, going back to the earliest generative treatments (McCloskey, 1978) on the rich class of elements which are taken to be members of the category C in Irish. A full list of these elements is given in (28).

(28) **Irish Complementizers**

<table>
<thead>
<tr>
<th>Complementizer</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. go</td>
<td>Embedded Declarative Complementizer</td>
</tr>
<tr>
<td>b. a’</td>
<td>Indirect Relative Marker</td>
</tr>
<tr>
<td>c. d’</td>
<td>Direct Relative Marker</td>
</tr>
<tr>
<td>d. ní</td>
<td>Root Negation</td>
</tr>
<tr>
<td>e. nach</td>
<td>Non-root Negation</td>
</tr>
<tr>
<td>f. an</td>
<td>Interrogative Marker</td>
</tr>
<tr>
<td>g. dà</td>
<td>Irrealis Conditional Marker</td>
</tr>
<tr>
<td>h. mà</td>
<td>Realis Conditional Marker</td>
</tr>
<tr>
<td>i. mura</td>
<td>Negative coConditional Marker</td>
</tr>
</tbody>
</table>

In (28), we see that elements analyzed as C form a large class, ranging default subordinators (28a), relativizers (28b-c), negation (28d-e), conditional markers (28g-h), as well as an interrogative marker (28f).

Most of the elements in (28) perform functions standardly associated with the C-position, such as clause-typing. In addition, all are in complementary distribution, a pattern which falls naturally into place if they must ‘compete’ to occupy a single head position. Finally, at least one of them (28c) bears the distinctive mark of being phase-defining in that it must appear as the head of any clause out of which A’-movement applies (McCloskey, 2002).

(29) a. Dúirt Saoirse go sgríobh -fadh Áine leabhar.  
     say.PAST S. C write -FUT Á. book  
     ‘Saoirse said that Áine will write a book.’

b. Céard a’ dúirt Saoirse a’ sgríobh -fadh Áine ____?  
     what a’ say.PAST S. a’ write -FUT Á.
‘What did Saoirse say that Áine will write?’

All of these properties follow naturally if the elements in (28) are taken to occupy the highest position the clausal spine, i.e., are members of the category C.

Now let us briefly consider negation, because the claim that the negative markers in (28) are C requires more comment. This is particularly the case considering that a Pol head has been proposed for Irish as discussed above. Surely something like negation is better treated with this projection.

In fact, there is good evidence that polarity features like negation originate on Pol, but are then copied onto C, which is where they are realized (McCloskey, 2011). To see this, consider an example like (36).


‘If I were not to go and they were to lose, they would kill me.’

The crucial aspect of this example is that, morphologically, negation occurs on C (mur, the negative conditional marker), but is interpreted only in the left conjunct; negation does not scope over both conjuncts. McCloskey (2011) analyzes these examples as cases of left-conjunct agreement between two conjoined PolPs, demonstrated below.

(31) CP
    ├── CCOND, aNEG
    │     ├── PolP
    │        ├── PolP
    │        │     ├── Pol[NEG]
    │        │     ├── TP
    │        │     │   └── T [+FIN] ...
    │        │     └── PolP
    │        │        ├── Pol[-NEG]
    │        │        └── TP
    │        │             └── T [-FIN] ...

This analysis allows us to explain why negation is interpreted in only one conjunct, but occurs on a node, C, which scopes over both conjuncts. Furthermore, this argument allows us to safely treat the other negative markers in (28) as C as well.

It turns out, as we will see in the following section, that there is also morphological evidence that the elements in (28) form a single class.

3.2 C-Lowering

Although the evidence for the syntactic status of the clause initial particles in (28) as members of the category C seems unequivocal, in morphophonological terms they are proclitic on the finite verb. To account for this, McCloskey (1996), drawing on work in Sells (1984), argues that complementizers form a part of the Irish verbal complex. The reasons for this are twofold. First, complementizers and finite verbs form a single prosodic word, and nothing syntactically may intervene between them. Second, complementizers interact morphologically with finite verbs, again suggesting that they ‘go together’ at some level of representation. The question then becomes
how this works. Here I follow a line of thinking (McCloskey, 1996; Harley and Noyer, 1999; Oda, 2012) which conceives of this closeness between C and the finite verb as being formed through a process of C-lowering.

McCloskey (1996)'s arguments for C-lowering are entirely syntactic, analogous to the celebrated Emonds-Pollock arguments for V to T raising in French (Emonds, 1978; Pollock, 1989). They show that C’s are pronounced in a position following elements which can be shown to occupy positions at the left edge of TP, such as high adverbials and fronted phrases of various types. For our purposes here, the importance of the C-lowering hypothesis is that it resolves the tension between the clear syntactic and typological evidence that all of the elements in (28) occupy C, and the equally strong and clear morphological and phonological evidence that they are proclitic on the inflected verb. The observations which suggest this are at the core of our concerns here and we turn to them in the next section.

C-lowering can be naturally understood within the general framework of Distributed Morphology (Halle and Marantz, 1993, 1994). But before discussing the formalism, it is worth asking why one would pursue a morphological account of C-lowering. By hypothesis, the ban on lowering in a derivation holds only of the narrow syntax. This means that lowering could occur anywhere along the ‘PF’ branch of the derivation, using the Distributed Morphology sense of PF (Embick and Noyer, 2001, 2007). Particularly, there exists the possibility of phonological or prosodic displacement (Bennett et al., To Appear; Golston and Agbayani, 2010; Golston et al., 2015). This possibility is worth taking seriously, as it is what McCloskey originally proposed to account for C-lowering (McCloskey, 1996). Specifically, McCloskey proposed that C-lowering is motivated by the ‘prosodic weakness’ of complementizers.

I argue that this is not the best way to think about C-lowering. First, let us consider the phonological shape of the complementizers, given in (32)\(^{20}\).

\[
\begin{array}{|c|c|c|}
\hline
\text{Orthography} & \text{Meaning} & \text{Phonological shape} \\
\hline
\text{a.} & \text{go} & \text{Embedded Declarative Complementizer} & /\text{go}/ \\
\text{b.} & \text{a}^\text{\textdagger} & \text{Indirect Relative Marker} & /\text{a}/ \\
\text{c.} & \text{a}^{\text{l}} & \text{Direct Relative Marker} & /\text{a}/ \\
\text{d.} & \text{ní} & \text{Root Negation} & /\text{ní}/ \\
\text{e.} & \text{nach} & \text{Embedded Negative Complementizer} & /\text{náx}/ \\
\text{f.} & \text{an} & \text{Interrogative Marker} & /\text{a}/ \\
\text{g.} & \text{dá} & \text{Irrealis Conditional Marker} & /\text{dáx}/ \\
\text{h.} & \text{má} & \text{Realis Conditional Marker} & /\text{máx}/ \\
\text{i.} & \text{mura} & \text{Negative Conditional Marker} & /\text{múra}/ \\
\hline
\end{array}
\]

In (32), we see that some complementizers should be considered weak by any definition of prosodic weakness. These include (32a-c, f). But importantly, not all complementizers in Irish have the same prosodic shape. Some have long vowels (32d, h, and one has the bimoraic sequence [ax] (see Bennett To Appear for the argument for the bimoraic status of these sequence in Irish). One, mura, the negative conditional marker, is even bisyllabic. From this examination, we see that not all complementizers in Irish have the same prosodic shape. It seems wrong then to pin their uniform behavior with respect to lowering on their non-uniform prosodic characteristics.

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\(^{19}\) See McCloskey (1996) for the details

\(^{20}\) Note that these are the phonological shapes of the complementizers in the standardized language. Dialects differ slightly in how these are pronounced. For instance, mura, the negative conditional marker, has dialectal realizations as /múra/, /múra/, /múra/, and /múra/. None of this dialectal variation has any bearing on the discussion at hand.
Second, Irish complementizers do not behave like simple clitics (Zwicky, 1977), or equivalently like the phonological clitics investigated in Selkirk (1995). Unlike these phonologically determined clitics, Irish complementizers exhibit a strong requirement that their host be a finite verb. This contrasts with the behavior of a clitic like the Saxon genitive ‘ s in English, which famously can lean on any category. This type of category restriction does not fall out as naturally from a prosodic account, as prosodically Irish finite verbs are simple \( \omega \) (Elfner, 2012).

To see this more concretely, let us examine one of the kinds of examples that led McCloskey (1996) to propose C-lowering. This comes from the placement of TP adjuncts in embedded clauses. In Irish, adjuncts which can be argued on typological and semantic grounds to modify TPs appear to the left of embedded complementizers.

\[(33) \text{Deiridís } \text{ an chéad Nollaig eile } \text{ go } \text{ dtiocfadh } \text{ sé aníos. } \]

\( \text{say.3PL.PAST.HAB the first Christmas other C come.COND he up} \)

‘They used to say that next Christmas he would come up.’

Here the adjunct an chéad Nollaig eile ‘next Christmas’ occurs to the left of the embedded complementizer. Importantly, it must be interpreted in the lower clause though, not the higher. If this adjunct were interpreted in the higher clause, a tense clash would result, as the meaning ‘next Christmas’ cannot compose with the past habitual. The ungrammatical result would be something like a literal translation of (33) into English, ‘*They used to say next Christmas that he would come up.’ But, as (33) is actually grammatical in Irish, we need a way of understanding the mismatch between where the adjunct is pronounced and where it is interpreted.

Here, McCloskey (1996) appeals to C-lowering. His idea is schematized in (34).

\[(34) \text{Deiridís } \text{ an chéad Nollaig eile } \text{ dtiocfadh sé aníos } \rightarrow \text{Deiridís } \text{ an chéad Nollaig eile } \text{ go dtiocfadh sé aníos.} \]

The left-most sentence is what McCloskey proposes to be the output of the syntactic derivation. Here, the adjunct an chéad Nollaig eile ‘next Christmas’ occurs in a leftward position in the embedded clause. This straightforwardly captures the fact that this adjunct is obligatorily interpreted as modifying the embedded clause. Then, the complementizer lowers around the adjunct to the finite verb, deriving the observed surface order.

Now, let us return to the possibility that C-lowering is prosodically driven. If this were the case, then it must be that complementizers must adjoin to a prosodic word. But if this were the only requirement, then there is no \textit{a priori} reason why a prosodic parse like (35) is ungrammatical, where square brackets indicate prosodic constituency.

\[(35) *\text{Deiridís } [\text{go an chéad Nollaig eile} ] \text{ dtiocfadh sé aníos.} \]

The severe illformedness of (35) suggests that prosody-driven understandings of C-lowering are misguided in a deep way. They do not allow an understanding of the core property of the C-lowering process: the elements which lower (C) are drawn to a particular morphosyntactic category, namely the finite verb.

This conclusion is reenforced by an additional, and crucial observation. Lowered C participates in certain allomorphic alternations within subparts of the verbal complex, as I show in §3.3.2. While there are theories which account for allomorphy in the phonology or through phonological constituency (Ackeman and Neeleman, 2003; Ackeman and Neeleman, 2003; 22 In Zwicky (1977)’s typology of clitics, a simple clitic is a clitic which is simply a phonological dependent. Syntactically, they occur in the same position as a corresponding non-clitic, and do not show any of the ‘special’ syntax characteristic of his ‘special clitics.’ In Zwicky’s terms, Irish complementizers are special clitics most comparable to Romance object clitics.

22 Native speakers report that examples like (33) are quite natural, and provide no indication that the embedded adjunct is interpreted as either a focus or some kind of topic were given.
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Mascaró, 2007; Bennett, To Appear), these theories are best equipped to handle cases where the choice between two allomorphs is phonologically conditioned, particularly when selection of a certain allomorph appears to be phonologically optimizing. In the cases examined here, the allomorphy is in no sense phonologically optimizing. Therefore, I suggest that it is better to account for this case of allomorphy in the morphology.

Let us agree then that a prosodic account is not within reach and develop a morphological account of C-lowering within the general framework of Distributed Morphology (Halle and Marantz, 1993, 1994).

Within the DM literature there is a formalization of lowering which fits the bill. This is the operation called Lowering, proposed by Embick and Noyer (2001). Embick and Noyer’s formalism is provided below in (36), and is presented in tree format in (37).

\[
\frac{[XP \ X^\circ \cdots [YP \ Y^\circ \cdots ]]}{\Rightarrow [XP \ [YP \ [Y^\circ \ X^\circ ] \cdots ]]} \tag{36}
\]

\[
\begin{array}{c}
\text{XP} \\
\text{X}^\circ \\
\text{YP} \\
\text{Y}^\circ \\
\vdots
\end{array}
\quad \Rightarrow
\begin{array}{c}
\text{XP} \\
\text{YP} \\
\text{Y}^\circ \\
\text{X}^\circ \\
\vdots
\end{array}
\]

Here, Lowering takes the head of a phrase and adjoins it to the head of its complement, creating a complex head very similar to the complex heads created by head-to-head adjunction. I will adopt Embick & Noyer’s understanding of Lowering. But before we examine the kind of morphosyntactic object results from Lowering of C, we must take a closer look at some important morphological characteristics of Irish complementizers.

3.3 Triggering and Non-Triggering Complementizers

As discussed briefly above, there are two classes of complementizers, which I term ‘triggering’ complementizers and ‘non-triggering’ complementizers. The reason for this naming will become apparent shortly. They are shown in (53).
As mentioned briefly in §1, morphological class membership seems to be an idiosyncratic of particular VEs. To help the reader remember which complementizers belong to which class, in the following text triggering complementizers will be marked with a subscript $C_T$, and non-triggering complementizers with $C_{NT}$.

First, there are clearly no prosodic or phonological characteristics which separate the two classes. Take, for instance, the realis conditional $má_{NT}$ [m3a\textregistered] ‘if.\textsc{real}’ and $dá_{T}$ [d3a\textregistered] ‘if.\textsc{irreal}’. In terms of prosodic shape, they are identical, yet one is triggering and the other is not. Likewise, the two relativizers $a^{L}_{NT}$ and $a^{N}_{T}$ are both schwas, making any phonology-based class membership unlikely\(^{23}\).

Second, there does not seem to be an independently motivated morphosyntactic feature which isolates one class from another. This is a bit more difficult to see. A good test case is McCloskey (2002)’s analysis of various alternations in complementizers relating to A’-extraction. McCloskey successfully accounts for these elaborate patterns by appealing to an elegantly simple feature set, reproduced in (39).

(39)

<table>
<thead>
<tr>
<th>[EPP]</th>
<th>[-EPP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[OP]</td>
<td>$a^{L}$</td>
</tr>
<tr>
<td>[-OP]</td>
<td>$a^{N}$</td>
</tr>
</tbody>
</table>

This feature set successfully separates the triggering complementizers $a^{L}_{T}$ and $go_{T}$ from their non-triggering counterpart $a^{N}_{NT}$ through the [OP] feature. This provides hope that a morphosyntactic account could be within reach.

\(^{23}\) Readers familiar with Irish may see the correlation between initial consonant mutation and class membership. Specifically, all of the non-triggering complementizers cause lenition, while most of the non-triggering complementizers cause eclipsis. There does not seem to be theoretical significance to this though, as the high-frequency negative marker $mí_{T}$ lenites, while the negative C of Ulster dialects ($cha$) sometimes lenites and sometimes eclipses under very complex and variable conditions. Therefore, mutation does not seem to be linkable to morphological class membership.
This account makes incorrect predictions for the conditional markers though. The realis conditional $má_{NT}$ is non-triggering, while the irrealis conditional $dá_{T}$ is triggering. There is no syntactic or semantic evidence which suggests that conditionals of any kind in Irish involve movement of an operator to their specifier. And furthermore, even if one were to propose such a syntax, I do not see how one would only have this movement in realis conditionals but not irrealis conditionals, or why one would want to do this.

What is more, there is good evidence that conditionals like $má_{NT}$, the realis conditional, do not involve any kind of relative/movement syntax. This can be seen by examining certain dialectal data. In many Irish dialects$^{24}$, present and future tense verbs are marked with the morpheme -$s$ in direct relative clauses (those introduced with $dá_{NT}$). The following examples are from a speaker from Gaeltacht Lár, Co. Donegal.

\begin{align*}
\text{(40) } & \text{an buachaill } á_{NT} \text{ bhí -onn } -s \text{ ag súil thar mo theach gach lá...} \\
& \text{the boy } á_{l} \text{ be } -\text{PRES -s walk.PROS past my house every day} \\
& \text{‘the boy who walks past my house every day.’}
\end{align*}

Crucially, -$s$ never occurs with verbs following the realis conditional marker $má_{NT}$ in any dialect.

\begin{align*}
\text{(41) } & \text{*Má } bhí -onn -s \text{ an buachaill ag súil thar mo theach lá...} \\
& \text{if.REAL be } -\text{PRES -s the boy walk.PROS past my house every day} \\
& \text{Intended: ‘If the boy walks past my house every day...’}
\end{align*}

Abstracting away from the exact analysis of -$s$, the differences in its distribution between (40) and (41) tells us that $má_{NT}$ ‘if.REAL’ does not contain $a_{l}$, and furthermore, most likely does not contain relative clause/movement syntax. This becomes especially transparent when we consider indirect relative clauses (those introduced with $a_{NT}$). Consider the following examples, provided by a speaker from Tory Island, Co. Donegal.

\begin{align*}
\text{(42) a. } & \text{Sin an ghrisheach } a_{NT} \text{ ghoid } -\text{feas na siogáí___,} \\
& \text{that the girl } a_{l} \text{ steal } -\text{FUT.s the fairies} \\
& \text{‘That’s the girl who the fairies will steal.’} \\
\text{b. } & \text{Sin an ghrisheach; } a_{NT} \text{ ngoid } -\text{fidh na siogáí } i, \\
& \text{that the girl } a_{l} \text{ steal } -\text{FUT the fairies her} \\
& \text{‘That’s the girl who the fairies will steal.’} \\
\text{c. } & \text{*Sin an ghrisheach; } a_{NT} \text{ ngoid } -\text{feas na siogáí } i, \\
& \text{that the girl } a_{l} \text{ steal } -\text{FUT.s the fairies her} \\
& \text{‘That’s the girl who the fairies will steal.’}
\end{align*}

In (42), we see that relative clauses which McCloskey (2002) argues involve movement, namely those with gaps, allow the relative -$s$, while relative clauses which conceivably do not involve movement, such as the examples with resumption in (42b-c), do not allow -$s$. If we take this observation to its strongest conclusion, we can claim that -$s$ is only possible in clauses which have had $A’$-movement out of them. As $má_{NT}$, the realis conditional marker, does not allow -$s$, we can posit that clauses introduced by $má_{NT}$ do not involve $A’$-movement either.

From this, we can conclude that complementizer class membership is not contingent on movement/$A’$-syntax. If it were, then we would expect the realis conditional $má_{NT}$, which has been argued to not involve movement/$A’$-syntax, to pattern with $a_{NT}$, $g0_{T}$, and the another complementizers which McCloskey (2002) argues to not involve movement. But this is not the case; $má_{NT}$ patterns with $a_{NT}$, which McCloskey (2002) argues does involve

$^{24}$ Relative endings are not a part of the standard language, and many speakers report strong prescriptive pressure against their use, making it difficult to identify a precise geographic area where they are in use. This being said, they are quite common in the spoken language, and are most typically associated with Connemara and Ulster dialects.
A final note is about the general ‘irrealis’ character of many of the triggering complementizers, such as the negative markers, the interrogative marker, and the irrealis conditional. This account does not withstand scrutiny though. In order to see this, consider examples like (58), adapted from McCloskey (2002).

(43) a. an ghirseach aNT ghood -fidh na sioagá the girl aN steal -FUT the.PL fairies
   ‘the girl who the fairies will steal’

b. an ghirsearch aN goid -fidh na sioagá i the girl aN steal -FUT the.PL fairies her
   ‘the girl who the fairies will steal’

As discussed in great detail in McCloskey (2002), Irish allows two kinds of relative clauses; ones involving a resumptive pronoun (43b), and those without. (43a) and (43b), despite their greatly different syntactic profiles, are largely in free variation. There is no sense in which (43b) is ‘irrealis’ while (43a) is ‘realis.’ This sheds doubt on this counterfactuality being the relevant characteristic. Furthermore, consider examples like (44).26

(44) a. Tá fios agam goT bpós -faidh siad.
   be.PRES knowledge at.me C marry FUT they
   ‘I know that they will get married.’
   → they will get married

b. NíT huil fios agam goT bpós -faidh siad.
   NEG be.PRES.DEP knowledge at.me C marry FUT they
   ‘I don’t know that they will get married.’
   → they will get married

c. NíT huil fios agam anT bpós -faidh siad.
   NEG be.PRES.DEP knowledge at.me Q marry -FUT they
   ‘I don’t know if they will get married.’
   / they will get married

The triggering complementizer goT is perfectly compatible introducing embedded realis clauses; in fact, this seems to be its purpose. For an irrealis embedded clause to be introduced, the interrogative marker anT is required, as in (44c).

Therefore, the conclusion seems unavoidable that class membership is an idiosyncratic property of Vocabulary Entries.

3.3.1 -r and do

One of the crucial differences between triggering and non-triggering complementizers involves the morpheme ‘-r.’ -r is one of the markers of past tense, and seems to “double” the suffixal marking of that tense discussed in §2.1. Consider examples like (45).27

25 Many thanks to Jason Merchant (p.c.) for this observation
26 Note that the combination ní fhul as in (43b-c) is normally written in Irish orthography as a single word níl. They are written separately here purely for expository purposes.
27 The notation ‘(h?)’ indicates that these examples are so profoundly ungrammatical and unconscionable that it is not clear what consonant mutation would be licensed in this environment.
Past tense is marked here in two places, both by -r and by the synthetic ending -eadar '3PL.PAST,' which we saw above in §2.1 expones T. Likewise, (45b-c) demonstrate that -r is restricted to the past tense.

Crucially, -r is impossible after non-triggering complementizers, as shown in (46).

This provides our first diagnostic for distinguishing the two classes of complementizers. Here, I will follow McCloskey et al. (2014) and propose that -r occupies a high T projection, above the T projection discussed in §2.1. Thus, the Irish verbal extended projection is updated as in (47).

Crucially, nothing hinges on this choice, and different theoretical choices which analyze -r as doubly exponing tense are equally compatible with the proposal and argumentation here. For instance, Oda (2012), apparently following a suggestion in Rizzi (1997), analyzes -r as tense-agreement on C. Critically for us though, Oda’s proposal involves C-lowering, as ours does, as well as C-fission, producing a structure as in (i).

The ultimate structure for the Irish verbal complex we propose here is functionally identical to Oda’s. Furthermore, the account presented here involves less theoretical machinery; no Fission is required, and no distinction between ‘C-T features’ and ‘T-T features’ (i.e., a distinction between features inherent on a node and features which are copied onto a node through agreement) is necessary for us, while they are for Oda. But again, both accounts produce functionally identical structures, and it is only the shared geometry of these structures which is necessary for the argumentation here. Furthermore, I abstract away from how tense features on the two T projections are matched, and simply assume that they must be identical.
Furthermore, we can easily write a Vocabulary Entry for -r once we have acknowledged that triggering complementizers are distinct from non-triggering complementizers. This is shown in (48).

(48) a. \(<T_{HIGH}\text{PAST}> \Leftrightarrow -r / C_T\>
    b. \(<T_{HIGH}\text{PAST}> \Leftrightarrow \emptyset\>

The Vocabulary Entries in (48) can account for the distribution of -r observed here, namely that it occurs only after triggering complementizers and only in past tense contexts. Vocabulary Entries like (48) of course presuppose the distinction between triggering and non-triggering complementizers.

Now, \(T_{HIGH}\) has one more exponent, which will be of some interest to us in §6.1. I will refer to this exponent as ‘do,’ although it normally surfaces as just \(d\). \(do\) shows phonologically conditioned allomorphy, and occurs before vowel-initial verbs (Armstrong, 1975), as shown in (49).

(49) *(D*) ith -emar.
    \(do\) eat -1PL.PAST
    ‘We ate.’

\(do\) occurs only in root clauses and after non-triggering complementizers, as in (50).

(50) a²\(NT\) \(d\)’ol -as
    a²\(NT\) \(do\) drink -1SG.PAST
    ‘…that I drank…’

\(do\), like -r, also occurs only in the past tense.

(51) a. a²\(NT\) *(do)*’ol -ais …
    a²\(NT\) \(do\) drink -2SG.PAST
    ‘…that I drank…”
    b. a²\(NT\) \(d\)’ol -aim …
    a²\(NT\) \(do\) drink -1SG.PRES
    Intended: ‘…that I drink…”
    c. a²\(NT\) \(d\)’ol -fad …
    a²\(NT\) \(do\) drink -1SG.FUT
do clearly forms a group with -r in exponing $T_{\text{HIGH}}$ rather than $T_{\text{LOW}}$, realized by the synthetic ending -ais in (51a).

In contrast with -r though, do is never permitted to occur after triggering complementizers. Instead, -r always is selected. This pattern is shown in (52)$^{29}$.

(52) a. *go$^\text{d'}$ ól -as
    C do drink -1SG.PAST
    Intended: ‘...that I drank...’

b. gu$^\text{-r}$ ól -as
    C -r drink -1SG.PAST
    ‘...that I drank...’

With this distribution in mind, we can propose the following. While the Vocabulary Entry of -r must be restricted to occurring after triggering complementizers (48a), do does not seem to be restricted to only occurring after a certain set of complementizers. This is because it occurs when no complementizer precedes it (49) as well as after non-triggering complementizers (51). Therefore, we can update our Vocabulary Entries for $T_{\text{HIGH}}$ from (48) as in (53).

(53) Vocabulary Entries for $T_{\text{HIGH}}$

a. $<T_{\text{HIGH}}:\text{PAST}> \leftrightarrow -r / \ C_T$

b. $<T_{\text{HIGH}}:\text{PAST}> \leftrightarrow do / \_V$

c. $<T_{\text{HIGH}}> \leftrightarrow \emptyset$

The Vocabulary Entries in (53) capture the core generalizations about the exponents of $T_{\text{HIGH}}$. -r’s distribution is rightly restricted to occurring only after triggering complementizers. do on the other hand is not restricted in such a way, as discussed above. Instead, its distribution is restricted phonologically, occurring only before vowel-initial verbs$^{30}$. (53c) captures the fact that $T_{\text{HIGH}}$ is always silent in every tense but the past.

Thus, the occurrence of -r provides our first diagnostic for morphological class membership. This is summarized in (54).

(54)

<table>
<thead>
<tr>
<th>C_T</th>
<th>C_NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-r?</td>
<td>✓</td>
</tr>
</tbody>
</table>

$^{29}$ Note that the alternation between go$^\text{d'}$-gu is purely orthographic.

$^{30}$ Some dialects of Munster are archaic in allowing do before all verbs. In these varieties, do may optionally occur before any verb, although it is still restricted in terms of which complementizers may come before it. These varieties can easily be analyzed in this system by proposing that they simply lack the phonological restrictor in (53b), as in (i).

(i) $<T_{\text{HIGH}}:\text{PAST}> \leftrightarrow do$
3.3.2 The Dependent/Independent Alternation

Triggering complementizers are distinguished from non-triggering complementizers in a second important way. Triggering complementizers are the crucial triggers for the *dependent/independent alternation*. This is a typologically rare form of verbal suppletion which is caused by the triggering complementizers.

It is worth pointing out that the very existence of the dependent/independent alternation provides further support for the existence of C-lowering in Irish. This is due to the observation made in Bobaljik (2012) and Bobaljik and Harley (To Appear) that allomorphy seems to only be possible when no maximal projection boundaries separate the nodes involved. To see why this is an argument for C-lowering, consider a structure without C-lowering as in (55), as well as the structure proposed here with C-lowering, in (56).

As can be seen by comparing these two structures, C-lowering, as modeled with morphological Lowering (Embick and Noyer, 2001; Oda, 2012), creates the right local environment for Bobaljik (2012)’s locality conditions to apply. A structure without C-lowering would be forced to give up on the striking and important typological generalizations uncovered by Bobaljik, which would be unfortunate.

The full list\(^{31}\) of verbs which undergo this suppletion is shown in (57).

\(^{31}\) There is dialectal variation about which verbs undergo the dependent/independent alternation, as will be discussed in §4.1. But in all dialects, the basic grammar of the pattern remains constant. The forms provided in (57) are consistent with most Connemara dialects.
## Past Tense Alternations

<table>
<thead>
<tr>
<th>Citation Form</th>
<th>Independent Form</th>
<th>Dependent Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>bi</em> ‘be’</td>
<td><em>bhí</em></td>
<td><em>raibh</em></td>
</tr>
<tr>
<td>[bi:]</td>
<td>[vi:]</td>
<td>[rəv] or [rə]</td>
</tr>
<tr>
<td><em>déan</em> ‘do’</td>
<td><em>rinne</em></td>
<td><em>dear</em>na</td>
</tr>
<tr>
<td>[dən]</td>
<td>[rɪn]</td>
<td>[dər.nə]</td>
</tr>
<tr>
<td><em>feic</em> ‘see’</td>
<td><em>chonaic</em></td>
<td><em>faca</em></td>
</tr>
<tr>
<td>[fək]</td>
<td>[kə.nɪ]</td>
<td>[fa.kə]</td>
</tr>
<tr>
<td><em>téig</em> ‘go’</td>
<td><em>chuaigh</em></td>
<td><em>deach</em>aigh*</td>
</tr>
<tr>
<td>[tək]</td>
<td>[kʊ.ɪ]</td>
<td>[də.kaɪ]</td>
</tr>
</tbody>
</table>

## Future & Conditional Alternations

<table>
<thead>
<tr>
<th>Citation Form</th>
<th>Independent Form</th>
<th>Dependent Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>faigh</em> ‘get’</td>
<td><em>gheobhaidh</em></td>
<td><em>bhfaighd</em></td>
</tr>
<tr>
<td>[fək]</td>
<td>[ɡəb.ɪ]</td>
<td>[b.həɪ.d]</td>
</tr>
</tbody>
</table>

## Present Tense Alternations

<table>
<thead>
<tr>
<th>Citation Form</th>
<th>Independent Form</th>
<th>Dependent Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>bi</em> ‘to be’</td>
<td><em>tá</em></td>
<td><em>fui</em></td>
</tr>
<tr>
<td>[bi:]</td>
<td>[ta:]</td>
<td>[fui]</td>
</tr>
</tbody>
</table>

As can be seen by comparing dependent forms with independent forms, there is no way in the phonology of Modern Irish to get from one form to the other. This justifies the treatment of the dependent/independent alternation as suppletive.

As stated above, dependent forms occur only after triggering complementizers. This is shown in (58).

(58) **The Distribution of Dependent Forms**

a. *An bhfaighd* Seán carr na?  
   Q get.FUT.DEP S. car new  
   ‘Will Seán get a new car?’

b. *An gheobhaidh* Seán carr na?  
   Q get.FUT.INDEP S.car new  
   Intended: ‘Will Seán get a new car?’

c. *Má fhaca* Seán Aoife…  
   if.REAL see.PAST.DEP S. A.  
   Intended: ‘If Seán saw Aoife…’

d. *Má chonaic* Seán Aoife…  
   if.REAL see.PAST.INDEP S.A.  
   ‘If Seán saw Aoife…’

e. *Chonaic* Seán Aoife.  
   see.PAST.INDEP S. A.  
   ‘Seán saw Aoife.’

f. *F(h?)aca* Seán Aoife.  
   see.PAST.DEP S. A.  
   Intended: ‘Seán saw Aoife.’

(58a-b) demonstrates that dependent forms must occur after triggering complementizers. (58c-f) jointly show that dependent forms may appear only when preceded by a triggering C.
This distribution gives us insight into how the Vocabulary Entries for these morphemes are to be structured. Independent forms seem to be the default allomorphs, as they occur both after non-triggering complementizers and when no overt complementizer is present. Dependent forms are best thought of as contextual allomorphs, as they appear only after triggering complementizers. We can expect these VEs then to have the basic structure of (59).

\[(59) \begin{align*}
\text{a. } & <\sqrt{DEP/INDEP\text{ ROOT}}...> \Leftrightarrow \text{Independent Form} \\
\text{b. } & <\sqrt{DEP/INDEP\text{ ROOT}}...> \Leftrightarrow \text{Dependent Form} / C_T \end{align*}\]

This provides us with our second and final diagnostic for distinguishing triggering from non-triggering complementizers.

(60) **Diagnostics for Distinguishing Triggering and Non-Triggering Complementizers**

<table>
<thead>
<tr>
<th></th>
<th>$C_T$</th>
<th>$C_{NT}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$-r$?</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Dependent forms?</td>
<td>✓</td>
<td>×</td>
</tr>
</tbody>
</table>

One last point is crucial. $-r$, discussed in §3.3.1 may not be followed by dependent forms of the verb. Consider (61-62).

(61) **Normal Verb with Triggering C**

a. A$_T$ $-r$ chuir Tadhg an bia ar an bhord?
   Q $-r$ put.PAST T. food on the table
   ‘Did Tadhg put the food on the table?’

b. *An$_T$ gcuir Tadhg an bia ar an bhord?
   Q $-r$ put.PAST T. food on the table
   Intended: ‘Did Tadhg put the food on the table?’

(62) **Dependent/Independent Verb with Triggering C**

a. An$_T$ bhfaca Tadhg an film nua?
   Q see.PAST.DEP T. the movie new
   ‘Did Tadhg see the new movie?’

b. *An$_T$ chonaic Tadhg an film nua?
   Q see.PAST.INDEP Tadhg the movie new
   Intended: ‘Did Tadhg see the new movie?’

c. *A$_T$ $-r$ bhfaca Tadhg an film nua?
   Q $-r$ see.PAST.DEP T. the movie new
   Intended: ‘Did Tadhg see the new movie?’

d. *A$_T$ $-r$ chonaic Tadhg an film nua?
   Q $-r$ see.PAST.INDEP T. the movie new
   Intended: ‘Did Tadhg see the new movie?’

(61) shows again that $-r$ is normally required after triggering complementizers. (62) demonstrates that $-r$ may not cooccur with a dependent verb form.
In analyzing these intricate patterns, I follow the core insight of Oda (2012) in treating dependent forms as fundamentally portmanteaux. To rework Oda’s observation in our system, the proposal is that dependent forms contain one more node than other verbs, specifically T\text{HIGH}. The basic idea is schematized in (63).

\begin{enumerate}
\item \( \sqrt{\text{DEP/INDEP ROOT} \ldots + T_{\text{HIGH}}} \) \( \cancel{\Rightarrow} \) \text{Dependent Form} / C_T \\
\item \( \sqrt{\text{NORMAL ROOT} \ldots} \) \( \cancel{\Rightarrow} \) \text{Normal Verb/Independent Form} \\
\item \( T_{\text{HIGH}}: \text{PAST} \) \( \cancel{\Rightarrow} \) -r / C_T \\
\end{enumerate}

(63) encodes the idea that dependent forms are portmanteaux. Dependent forms are analyzed as containing all of the material that normal verbs do, with one extra element: T\text{HIGH}. This straightforwardly derives the complementary distribution between dependent forms and -r\textsuperscript{32}. Because dependent forms are portmanteaux containing T\text{HIGH}, by whatever principle requires portmanteaux to win\textsuperscript{33}, the dependent forms must be selected. As they contain T\text{HIGH}, they block independent insertion of this node by -r, appealing to a Vocabulary Entry like (76c). Therefore, the portmanteaux analysis correctly derives the complementary distribution of dependent forms and -r.

Note that independent verbs are not analyzed as containing T\text{HIGH}. While it is often hard to tell, in the Munster dialects mentioned above which allow do, or T\text{HIGH}, to occur before consonant initial verbs, it may occur quite freely with independent forms.

\begin{enumerate}
\item Do chonac. \\
\hspace{1cm} do see.1SG.PAST.INDEP \\
\hspace{1cm} ‘I saw.’ \\
\item Do bhí -os. \\
\hspace{1cm} do be.PAST.INDEP -1SG.PAST \\
\hspace{1cm} ‘I was.’
\end{enumerate}

This suggests that T\text{HIGH} is not contained within independent forms, while the complementary distribution between dependent forms and -r suggests the opposite.

3.4 Interim Summary

Let us take stock. First, in §2, we examined the lower nodes of the Irish verbal complex. Most importantly, in §2.1 we examined synthetic endings (McCloskey and Hale, 1984; Legate, 1999; Brennan, 2009; Diertani, 2011). Crucially for the theoretical discussion which follows, I analyzed these synthetic endings as exponing T, or more specifically T\text{LOW} in the Stowell (2007)-ian split-T system adopted here.

Next we examined the higher nodes of the Irish verbal complex. First, we examined complementizers, and the notion of C-lowering was introduced. Then we analyzed C-lowering as morphological Lowering (Embick and Noyer, 2001). All of this provided us with the critical structure in (66), which parses the verbal complex in (65)\textsuperscript{34}.

\textsuperscript{32} Note that dependent forms would never compete with do, because do does not occur after triggering complementizers, where -r and dependent forms must.

\textsuperscript{33} As far as I know, no proposals exist to derive this principle from more basic theoretical components. One notable exception is Svenonius (2012), who analyzes the preference for portmanteaux as being prosodic in nature. Specifically, as portmanteaux are one word, they project less prosodic structure than corresponding analytic constructions. This is modeled in an OT framework using a *\text{STRUCTURE} constraint, which portmanteaux do not violate and corresponding analytic constructions do. It is unclear how this could be applicable to the data under discussion here, as -r is not even a syllable, and therefore doesn’t project any prosodic structure.

\textsuperscript{34} Here I employ a successive Lowering analysis, involving C first lowering to T\text{HIGH} and then the now complex T\text{HIGH} Lowering to Pol. This is done before it produces the right order of morphemes predicted by the Mirror Principle. Any other combination of head-movement, such as
‘They didn’t leave.’

It is this complex head in (66) which makes Irish important to the discussion about portmanteaux phenomena. Specifically, its combination of successive morphological lowering, combined with extensive syntactic head-movement creates a singularly complex verbal complex which, as it turns out, will allow us to disentangle two notions which have often been underdetermined in the literature: syntactic constituency and linear adjacency.

Next in §3.3, we examined the morphological properties of complementizers, and saw that they need to be divided into two morphological classes, which I term the ‘triggering’ complementizers and the ‘non-triggering’ complementizers. In §3.3.1 and §3.3.2 we saw the evidence for distinguishing these two groups, leading us to the diagnostics in (60) above, reproduced in (67) below.

(67)  Diagnostics for Distinguishing Triggering and Non-Triggering Complementizers

<table>
<thead>
<tr>
<th></th>
<th>$C_T$</th>
<th>$C_{NT}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$-r$?</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Dependent forms?</td>
<td>✓</td>
<td>×</td>
</tr>
</tbody>
</table>

Particularly important for the discussion which follows are the two portmanteaux which we have discovered within the Irish verbal complex: synthetic verbal suffixes (§2.1) and dependent verbal forms (§3.3.2).

(68) a. $<T_{LOW} + \phi > \Leftrightarrow$ Synthetic Form
    b. $<\sqrt{\text{ROOT}} + \ldots T_{\text{HIGH}} > \Leftrightarrow$ Dependent Form

It is the interaction between these two portmanteaux which will be enlightening in the discussion which follows.

the verb raising to $T_{\text{HIGH}}$ and C lowering, or $T_{\text{HIGH}}$ raising to C, and then lowering with C to Pol, produce structures which are compatible for the locality argumentation necessary here.
4 Previous Accounts of Portmanteaux

Recent work within the DM tradition provides two accounts of portmanteaux phenomena\textsuperscript{35}. The first is what I refer to ‘Insertion and Non-Terminal Node’ (INT) theories, to use a term from Embick (To Appear). We will see the very architecture of these theories renders them fundamentally unable to account for the Irish patterns, given the complex head structure proposed here in (66). Next we examine a family of theories which fare better, which I term Spanning (Williams, 2003; Abels and Muriungi, 2008; Bye and Svenonius, 2010; Svenonius, 2012; Merchant, 2015). Spanning theories are much more flexible than INT theories, in a certain sense giving them a significant advantage. But we will see that Spanning accounts, particularly Merchant (2015), make a prediction about possible cooccurrences of the two portmanteaux of the Irish verbal complex. In §5, we will see that this prediction does not pan out, leaving us with the task of constructing a theory which can handle the Irish facts. This is done in §6.

4.1 Insertion at Non-Terminal Nodes

INT theories (Neeleman and Szendrői, 2007; Caha, 2009; Radkevich, 2010; Bobaljik, 2012) depart from classical DM’s conception of Vocabulary Insertion in that they allow Vocabulary Insertion to target non-terminal nodes. To see this, consider (69-70). (69) shows the possible Insertion sites in classical DM, while (70) shows the possible Insertion sites for INT theories.

\begin{align}
\text{(69) Insertion in Classical DM} & \quad \text{(70) Insertion in INT} \\
\begin{array}{c}
\text{N1} \\
\text{N2} \\
\text{N3} \\
\text{N4}
\end{array} & \quad \begin{array}{c}
\text{N1} \\
\text{N2} \\
\text{N3} \\
\text{N4}
\end{array}
\end{align}

Both theories share the idea that Vocabulary Insertion can target terminal nodes. They differ in their treatment of non-terminal nodes. In classical DM, these are not possible Insertion sites, while in INT they are.

The theoretical adequacy of INT theories has been questioned independently (Embick, To Appear; Merchant, 2015), and the Irish data examined here provide a further reasons for skepticism. To see why, consider the proposed VE for a dependent form, reproduced from (68b) above in (71).

\text{(71) } <T_{\text{HIGH}}\ldots + \sqrt{\text{ROOT}}> \leftrightarrow \text{Dependent Form}

In order for INT theories to work with a VE such as (71), there would need to be a syntactic constituent which consisted solely of $T_{\text{HIGH}}$ and the Root, as well as any other functional material one may want to include in these forms. It is at this point that the complexity of the Irish verbal complex, and the substantial mismatch between syntactic and morphological structure intrinsic to it, becomes theoretically useful.

\textsuperscript{35} I do not discuss the classical DM approach to portmanteaux, namely Fusion. There are good arguments for the theoretical inadequacy of Fusion theories (Caha, 2009; Svenonius, 2012; Haugen and Siddiqi, 2013a), and it is not clear to me how or if a Fusion account would make different predictions than the Spanning account presented here. See also Georgi for important critiques of all of these approaches as well.
Importantly, if we assume the syntax in (66) no such constituent exists; the only node, non-terminal or otherwise, which contains both $T_{\text{HIGH}}$ and the root is the non-terminal Pol. The problem is that this node also contains C, predicting that complementizers should not occur with dependent forms. Since dependent forms occur only when preceded by a C of the appropriate subtype, this prediction could not be more off the mark.

Of course, one might reject the validity of (66): but there is now a very substantial body of observations and analysis which supports it (McCloskey, 1996, 2009; Elfner, 2011; Oda, 2012; Bennett et al., To Appear; McCloskey et al., 2014). Alternatively, one might reject the portmanteau analysis of dependent forms. Such an approach would require adding to our VEs for $T_{\text{HIGH}}$ by listing null allomorphs of this node only in the environment of dependent roots, as in (72).

(72) **Possible INT Theory Vocabulary Entries for $T_{\text{HIGH}}$**

a. $<T_{\text{HIGH}}:\text{PAST}> \leftrightarrow -r / C_T$

b. $<T_{\text{HIGH}}:\text{PAST}> \leftrightarrow do / V$

c. $<T_{\text{HIGH}} > \leftrightarrow \emptyset$

d. $<T_{\text{HIGH}}:\text{PAST}> \leftrightarrow \emptyset / <\sqrt{BE}>, <\sqrt{GO}>, <\sqrt{SEE}>, <\sqrt{DO}>$

This clearly misses the relevant generalization.

Furthermore, listing null allomorphs as in (72d) misses the most striking fact about the dependent/independent alternation; these null allomorphs make $C_T$ and the finite verb linearly adjacent. For this account, this remarkable generalization must be an accident or a secondary, emergent property of the constructions. The account developed below highlights this fundamental pattern, and captures it.

Besides this conceptual argument, cross-dialectal data provides additional support for the portmanteau analysis of dependent forms which an approach like that in (72) would have trouble accounting for. As mentioned above, dialects vary in terms of the inventory of verbs which show the dependent independent alternation. Some, like those of West Munster, have lost a large number, such as for the Root $\sqrt{GO}$ and $\sqrt{DO}$.

(73) **Non-dependent $\sqrt{GO}$ in West Munster**

a. **Chu** as féin isteach i naomhóg m’athar…

   go.PAST -1SG.PAST self into i currach my.father

   ‘I went into my father’s currach…’

   Ó Súilleabháin (1933) pg. 43

b. … gu $\tau$ chu -amair sos isteach ar an slip.

   C *-r go.PAST -1PL.PAST down into on the slip

   ‘…that we went down into the slip.’

   Ó Súilleabháin (1933) pg. 45

(74) **Non-dependent $\sqrt{DO}$ in West Munster**

a. Dhein -eas an cleas céanna le dosaen agus dosaen eile…

do.PAST -1SG.PAST the trick same with dozen and dozen other

   ‘I did the same trick with a dozen and then a dozen more.’

   Ó Súilleabháin (1933) pg. 39

b. … gu $\tau$ dhein Eoghan Ruadh ua Néill… gníomh direach de shaghas an gníomh…

   C *-r do.PAST E. action just of kind the.GEN action.GEN

   ‘…that Eoghan Ruadh ua Néill did just the kind of thing…’

   Ua Laoghaire (1915) pg. 2

What is striking about these examples is that when these verbs lost the dependent/independent alternation, they became fully regular, as evidenced by their occurrence with -r, which we saw above in §3.3.2 is not possible...
with dependent verbs. Furthermore, I know of no evidence for any kind of transitional period, something like in (75)\textsuperscript{36}.

(75) \textit{Unattested West Munster Dialect}

a. *go\textsubscript{1} gc\textsubscript{2} -amair s\textsubscript{3}os isteach ar an slip.
   C go.PAST -1PL.PAST down into on the slip
   Intended: ‘...that we went down into the slip.’

b. *go\textsubscript{1} nd\textsubscript{2}\textsubscript{1}in Eoghan Ruadh ua Néill ... gnömhn díreach de shaghas an gnímh ...
   C do.PAST E. action just of kind the.GEN action.GEN
   Intended: ‘...that Eoghan Ruadh ua Néill did just the kind of thing...’

By contrast, Vocabulary Entries such as (72d) incorrectly predict the existence of (75). This is because (72d) severs the fact that these Roots undergo the dependent/independent alternation from their incompatibility with -r, when in fact they always seem to vary together.

These correlations are directly predicted by a portmanteau analysis of dependent forms. In the absence of a portmanteau VE for the combination of T\textsubscript{HIGH} and the root, there is every reason to expect independent exponent of T\textsubscript{HIGH} - just what we observe in (73-74).

Now that we have seen why INT theories cannot capture the Irish facts, let us turn to a more promising alternative: Spanning.

4.2 Spanning

The basic idea behind Spanning (Williams, 2003; Abels and Muriungi, 2008; Bye and Svenonius, 2010; Svenonius, 2012; Merchant, 2015) is that Vocabulary Entries do not realize just terminal nodes. Instead, they may lexicalize ‘spans’ of an Extended Projection (Grimshaw, 2000, 2005). The formal definition of a Span from Merchant (2015) is provided in (76).

\textsuperscript{36} Examples like (75) superficially occur in some dialects, notably in Baile an Lochaigh Irish, in the westernmost part of the Dingle Peninsula, Co. Kerry. Many thanks to Jim McCloskey (p.c.) for making me aware of and providing me with the examples in (i) below.

(i) An\textsubscript{1} gc\textsubscript{2}aigh sibh a chodladh in aon chor?
   Q go.PAST you.PL to sleep one.way.or.another
   ‘Did you go to sleep one way or another?’

But, as reported in Ó Fiannachta (2009), this dialect simply lacks -r everywhere.

\textit{Níl ’r(o)’ in úsáid leis na míreanna speicheadh de ghnáth e.g. ‘go’ ‘ní’ ‘ná’ ...}

\textit{‘(r)’ is not used in general with the dependent preverbal particles, e.g. ‘go’ ‘ní’ ‘ná’ ...”} \textsuperscript{Ó Fiannachta (2009), pg. 10}

In other words, this dialect simply does not have -r. This is confirmed by the examples below, again generously provided by McCloskey (p.c.), where we see -r never occurs between triggering complementizers and normal verbs, which we saw is normally required in every other dialect I am aware of, as discussed in §3.3.1.

(ii) a. \ldots go\textsubscript{1} bhf\textsubscript{2}ag sé an post a bhf aige agus go\textsubscript{1} n-imigh sé as baile Cheatharlach.
   C leave.PAST he the job REL be.PAST at.him and C depart.PAST he from town Carlow
   ‘He left the job he had and left the town of Carlow.’

b. N\textsubscript{1}\textsubscript{2}\textsubscript{1}ch stare\textsubscript{2}gísh Muiris an ráiteas sin.
   NEG question.PAST M. the statement that
   ‘Muiris did not question that statement.’

Therefore Baile an Lochaigh Irish does not provide a true counterexample to the claim made in (75).
“Let T be an ordered n-tuple of terminal nodes <t₁,…,tₙ> such that for all t∈T, t=t₁ or t is an element of the extended projection of t₁.

a. For all k = 1…n, tk is a span. (Every node is a trivial span.)

b. For any n > 0, if tk is a span, then <t_k,…,t_k+n> is a span.” Svenonius (2012); Merchant (2015)

In other words, a Span is a contiguous subsequence of an Extended Projection, with the notion of contiguity defined in terms of selection (Svenonius, 2012).

In order to see this definition in action, consider (78), which provides every possible Span according to the definition in (76) for the Irish verbal Extended Projection, reproduced in (77).

(77)  The Irish Verbal Extended Projection

(78)  Every Possible Span in the Irish Verbal Complex

(78a-f) show that each terminal node is a Span, albeit a trivial one. (78g-k) demonstrates all possible Spans containing the Root. We see that any contiguous section of the Extended Projection, with contiguity defined in terms of selection (76), is a licit Span. What is an impossible Span is something like (78v), which contains only the Root and a non-contiguous node, in this case tₜ₉₉₉.

It is worth noting that no work on Spanning highlights the importance of the Root; the mechanism operates identically whether or not the Root is included. To see this, consider (78l-o). Here, we see all of the possible Spans in which v is the most deeply embedded node. (78w* is illicit for the same reason as (78v).
Now, an important piece to the discussion of Spanning comes from Merchant (2015), who proposes conditions for allomorphy selection within Spanning. His proposal, the Span Adjacency Hypothesis, is provided below in (79).

(79) **Span Adjacency Hypothesis**: Allomorphy is conditioned only by an adjacent span (Merchant, 2015).

To see how this proposal applies to Irish, let us reconsider the dependent/independent alternation. First, recall that it is a form of allomorphy triggered by adjacent complementizers.

(80) a. Chonaic Niamh an cat.
    see.PAST.INDEP N. the cat
    ‘Niamh saw the cat.’

b. ... go bhfaca Niamh an cat.
    C see.PAST.DEP N. the cat
    ‘...that Niamh saw the cat.’

Thus, the dependent/independent alternation is Root suppletion triggered by adjacent complementizers.

Importantly, within a Spanning theory which adopts the Span Adjacency Hypothesis in (79), in order for C to trigger allomorphy on the root, everything between C and the Root must be contained in one of the two portmanteaux. This means that either (78j) or (78o) must be adopted; (78j) if the intermediate material is included in the dependent portmanteau, and (78o) if it is included in C. As there is no evidence that C in examples like (80b) contains more material than it does in non dependent/independent alternation contexts, this means that (78j) must be the relevant form of dependent Vocabulary Entries.

This means that if the Span Adjacency Hypothesis is correct, then dependent forms must have Vocabulary Entries like (81), which provides the VE for the dependent form in (80b) *faca* ‘see’.

(81) $< \sqrt{\text{SEE}} + v + T_{\text{LOW:PAST}} + \text{Pol} + T_{\text{HIGH:PAST}} > \Leftrightarrow \text{faca} / C_T$ ___

To visualize the proposal differently, in order for C to trigger allomorphy on the Root, Spanning requires that all intermediate projections between C and $\sqrt{\text{ROOT}}$ be included. Referring back to the Extended Projection in (77), this means that $v$, $T_{\text{LOW}}$, Pol, and $T_{\text{HIGH}}$ must be included as well, as they are between C and $\sqrt{\text{ROOT}}$. This is what (81) incorporates.

Now, VEs like (81) mark a significant advance in our understanding of the dependent/independent alternation. This is because they straightforwardly account for the complementary distribution of dependent forms and -r. To see this, consider a structure like (82) in which all of the nodes contributing to a dependent form portmanteau are boxed.

(82) ___

---

37 Here I gloss over the debate about whether or not Root suppletion is possible (Marantz, 1997; Harley and Noyer, 1998a; Embick and Halle, 2005; Haugen and Siddiqi, 2013b), and instead point out that relabeling what I have been referring to as the Root with a functional category does not affect the locality argumentation here. Although I would like to point out that the only verb which undergoes the dependent/independent alternation which could justifiably be deemed a ‘member of the functional vocabulary’ is *bi* ‘be.’ To refer to the other verbs on the list, high-frequency though they may be, as ‘functional’ is to render the term theoretically vacuous. For this reason I continue with the Root suppletion analysis here.
Therefore, the Span Adjacency Hypothesis correctly predicts the complementary distribution of -r and dependent forms. This is because \( T_{\text{HIGH}} \), being included in the portmanteau, can have no independent exponent.

But the Spanning account introduced here in (81-82) also makes a strong prediction. The same logic which blocks -r and dependent forms from occurring together predicts that dependent forms should never occur with synthetic endings. This is because, just like \( T_{\text{HIGH}} \), the Span Adjacency Hypothesis requires that \( T_{\text{LOW}} \) be included in dependent form portmanteaux. In §2.1, I have argued extensively that synthetic endings expone \( T_{\text{LOW}} \). If these arguments are on the right track, then, just as dependent forms and -r (\( T_{\text{HIGH}} \)) cannot cooccur, dependent forms and synthetic endings (\( T_{\text{LOW}} \)) must not be allowed to cooccur either.

Let us see if this prediction holds up.

5 Bringing the Data Together:
The Dependent/Independent Alternation and Synthetic Endings

Unfortunately for the Spanning account, dependent forms and synthetic endings cooccur quite freely. Consider the examples in (83) from various Munster dialects, which we saw in §2.1 to be particularly rich in these forms.

\[(83)\]

a. \( \ldots \text{ná} _T \) rabh -ais choidhche gan casachtach\ldots

\[\ldots \text{that you were never without a cough}\ldots\]

\[\text{Breatnach (1947), pg. 93}\]

b. \( \text{agus} \text{ deir} \text{-ir liom go bhfaigh} \text{-ead mo ghuidhe?} \)

\[\text{‘And are you saying that I will get my wish?’}\]

\[\text{Ua Laoghaire (1907), pg. 1}\]

c. \( \text{fan} \text{ go_{f} bhfaigh} \text{-ead an scáthán suit.} \)

\[\text{‘Wait for me to get you the mirror.’}\]

\[\text{Ó Súilleabháin (1933), pg. 22}\]

d. \( \text{an} \text{ bhfac} \text{-ais an cailín úd?} \)

\[\text{‘Did you see that girl over yonder?’}\]

\[\text{Sayers (2009), pg. 56}\]

Synthetic ending occur quite freely with dependent forms even in dialects which are impoverished in the number of synthetic endings they use freely allow examples like (84).
On The Role of Linear Order in Portmanteaux

(84) a. C´a aN bhfuil -im?
    where aN be.PRES.DEP -1SG.PRES
    ‘Where am I?’

          b. D´a bhfaigh -inn carr nua, bhith -inn s´asta.
    COND.IRREAL.get.COND -1SG.COND car new be.COND -1SG.COND happy
    ‘If I were to get a new car, I would be happy.’

What is more, and even worse for the account we are currently considering, the synthetic endings which go
with dependent forms are absolutely identical to the synthetic endings which go with normal verbs. To see this,
consider the tables in (85-86), which demonstrate the Irish of Corca Dhuibhne, Co. Kerry (Ó Sé, 2000).

(85)    ‘see’ in the past

<table>
<thead>
<tr>
<th>Non-Alternating Verb</th>
<th>Dependent Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>chuir-eas</td>
</tr>
<tr>
<td>2SG</td>
<td>chuir-is</td>
</tr>
<tr>
<td>3SG</td>
<td>chuir s´e/s´i</td>
</tr>
<tr>
<td>1PL</td>
<td>chuir-eamair</td>
</tr>
<tr>
<td>2PL</td>
<td>chuir-eabhair</td>
</tr>
<tr>
<td>3PL</td>
<td>chuir-eadar</td>
</tr>
</tbody>
</table>

(86)    ‘get’ in the future

<table>
<thead>
<tr>
<th>Non-Alternating Verb</th>
<th>Dependent Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>cuir-feed</td>
</tr>
<tr>
<td>2SG</td>
<td>cuir-fir</td>
</tr>
<tr>
<td>3SG</td>
<td>cuirfidh s´e/s´i</td>
</tr>
<tr>
<td>1PL</td>
<td>cuir-fim´ıd</td>
</tr>
<tr>
<td>2PL</td>
<td>cuirfidh sibh</td>
</tr>
<tr>
<td>3PL</td>
<td>cuir-fid</td>
</tr>
</tbody>
</table>

The synthetic endings which attach to non-alternating and dependent forms are identical.

It is clear then that we need Vocabulary Entries such as (87).

(87) a. `< √DEPENDENT ROOT + T\^{HIGH} + \nu > ⇔ Dependent form / C_T`    
b. `<T_Low + \phi > ⇔ Synthetic ending`

On the one hand, we want to analyze dependent forms as portmanteaux involving the Root and T\^{HIGH}, as this
correctly gives us complementary distribution between -r and dependent forms. On the other hand, we want the
exponents of T\^{LOW}, the synthetic endings, to operate independently of the dependent/independent alternation, or
anything else which may be going on on the other side of the verbal complex. In effect, we have two spans over
which lexicalization takes place.

To put the proposal in a different way, we want only the boxed nodes in (88-89) to be contained within a
dependent form portmanteau.

---

38 With the exception of the first singular in the past. In some Munster dialects, first singular forms in the past of a small set of verbs are
marked by depalatalization of final consonants. This can be accounted for in our theory if we say that these forms, and only these forms,
include T\^{LOW}, and therefore the 1SG \phi-features. Also note the the orthographic ‘f’ in the future is purely orthographic; the synthetic endings
in (86) are written differently but pronounced identically (Ó Sé, 2000). The same is true for the extra ‘e’ in (85)’s non-alternating verb.
Looking at (88-89), we can immediately see the problem for existing theoretical accounts. The nodes contained within the portmanteaux do not form a constituent to the exclusion of $T_{LOW}$ at any level of morphosyntactic representation. Furthermore, this string of nodes is not possible even for theories like Spanning, which do not require constituency for their portmanteaux, as the sequence $T_{HIGH}$, $\sqrt{ROOT}$, and $v$ is not one of the possible Spans in (78).

But as we can see in (88), the proposed structure gives us another view of how these nodes relate to each other: they are all linearly adjacent within a complex head created in the immediate post-syntactic space. This can hardly be an accident.

6 Linear Adjacency and Vocabulary Insertion

In common with much current work (Adger, 2006; Embick, 2010; Arregi and Nevins, 2012; Bobaljik, 2012; Haugen and Siddiqi, 2013a), I propose a model of the post-syntactic by pre-phonological computation like that in (90).

(90) \[ \text{Spell-Out} \rightarrow \text{Lowering} \rightarrow \text{Linearization} \rightarrow \text{Vocabulary Insertion} \]

An important consequence of this architecture is that we expect allomorphy selection to show sensitivity to the linear order of morphemes. Embick (2010), in particular, develops a strong case for this position. Here I take the stronger position that Vocabulary Insertion itself uses information about linear order (Williams, 2003; Trommer, 2010; Haugen and Siddiqi, 2013a; Woolford, To Appear).

But how does this linear information relate to the structural information provided by the morphosyntax? Here I propose that, contrary to what appears to be an assumption made quite often, Linearization does \textit{not} overwrite or replace structure information. Instead, Linearization can be thought of as an additive process, which adds more
information to the hierarchical representation. (91) schematizes the information which is proposed to be available at each point in the derivation of (90).

(91)

<table>
<thead>
<tr>
<th>Spell-Out</th>
<th>Lowering</th>
<th>Linearization</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syntactic Information</td>
<td>Syntactic Information</td>
<td>Output of Lowering</td>
<td>Syntactic Information</td>
</tr>
<tr>
<td>Output of Lowering</td>
<td>Linear Information</td>
<td>Phonological Content</td>
<td></td>
</tr>
</tbody>
</table>

The view that Linearization is essentially additive has the correct consequence that the phonological operations which create prosodic representations have the access they need to syntactic representations (Selkirk 1984; Nespor and Vogel 1986; Selkirk 2009, 2011; Elfner 2012; Cheng and Downing to appear, inter alia). Furthermore, while we focus on the role of linear information here, this view predicts that Vocabulary Insertion should be sensitive to structural information, albeit apparently not in the portmanteau cases examined earlier.

Now, let us turn our attention to what our theories of Vocabulary Insertion must look like in order to be able to use Vocabulary Entries such as (87). Here, I propose that Vocabulary Insertion take place over two steps, drawing heavily on Bye and Svenonius (2010) and Svenonius (2012). The first step of Vocabulary Insertion is, following these earlier authors, Match, which matches the terminal nodes in a given syntactic structure to possible Vocabulary Entries, with no actual Insertion taking place.

Let us take, for example, a dependent verbal complex such as that in (83a), reproduced below in (92). Its proposed, linearized morphosyntactic structure is shown in (93).

(92) An̕ bhfac -ais
Q see.PAST.DEP -2G.PAST
‘Did you see...’

(93) Linearized Morphosyntactic Structure

On the basis of the morphosyntactic structure in (93), Match matches the terminal nodes with possible Vocabulary Entries without actually selecting any. This is shown in (94).
Matched VEs for (93)

C:Q

a. \(<C:Q> \leftrightarrow an_T\>

T_{HIGH: PAST}

b. \(<T_{HIGH: PAST}> \leftrightarrow -r \> / C_T \_{\text{---}}

c. \(<T_{HIGH: PAST}> \leftrightarrow do \> / \_\_\_ V

d. \(<T_{HIGH}> \leftrightarrow \emptyset \>

e. \(<T_{HIGH: PAST} + \sqrt{\text{SEE}} + v > \leftrightarrow bhfac- \) / C_T \_{\text{---}}

\sqrt{\text{SEE}}

f. \(<\sqrt{\text{SEE}} > \leftrightarrow chonaic \> / T: PAST

g. \(<T_{HIGH: PAST} + \sqrt{\text{SEE}} + v > \leftrightarrow bhfac- \) / C_T \_{\text{---}}

V

h. \(<v> \leftrightarrow -igh \>

i. \(<T_{HIGH: PAST} + \sqrt{\text{SEE}} + v > \leftrightarrow bhfac- \) / C_T \_{\text{---}}

T_{LOW: PAST, 2SG}

j. \(<T_{LOW: PAST, 2SG} > \leftrightarrow -is \>

k. \(<T_{LOW: PAST} > \leftrightarrow \emptyset \>

Pol

l. \(<\text{Pol} > \leftrightarrow \emptyset \>

(94) emerges from a search of all of the languages Vocabulary Entries\textsuperscript{39} for all entries compatible with a given node in a given morphosyntactic context.

Given (91), Match will have access to the output of the earlier derivational steps. Therefore, while a particular node is undergoing Match, this operation can see which nodes are concatenated with it. Using this linear information, Vocabulary Entries like (94e), which make reference to both the node undergoing Match and nodes linearly adjacent to it, are Matched as possible exponents of that node. What I mean will become apparent in the sample derivations which follow.

The notion of 'compatible' here is, of course, crucial. I assume that compatibility can be modeled using the Subset Principle (Halle, 1997). This is why none of the Vocabulary Entries in (95) are Matched in (94).

(95)

a. \(<T_{HIGH: FUT} > \leftrightarrow \emptyset \>

b. \(<T: PAST, 1SG > \leftrightarrow -eas \>

c. \(<T: FUT, 2SG > \leftrightarrow -fir \>

(95a) is not matched because, while the node $T_{HIGH}$ is itself compatible with the morphosyntactic structure in (93) undergoing Match, it contains an incompatible feature bundle. This makes it not a possible Match for the $T_{HIGH}$ node in (93). This same logic rules out the VEs in (95b-c) as well.

\textsuperscript{39} For justification for each of these Vocabulary Entries, see §2, §2.1, §3.3.1, and §3.3.2.
Importantly though, Vocabulary Entries such as (94c) are matched. This is because there is no phonological information present at this stage of the derivation, and therefore the system does not have the information necessary to either confirm or reject whether this VE is possible. But in order for it to ever stand a chance, it must be Matched in cases like this.

Another facet of this system is that a single Vocabulary Entry may be Matched to multiple nodes, producing redundant Matches. This can be seen in observing that (94e, g, i) are all identical. I assume that these redundant Vocabulary Entries are a harmless side effect of the Matching system adopted here, as it will only ever be possible to Insert one of them into a given morphosyntactic structure.

Following Match, the second step to Vocabulary Insertion is Insert, in which the Matched Vocabulary Entries are actually Matched to a given structure. Let us turn our attention to how this process works.

6.1 Vocabulary Insertion over Linearized Structures

Here I depart from classical DM in claiming that the process of Insert itself references linear information, not hierarchical information. Let us begin though by thinking about how Vocabulary Insertion works in classical DM.

Since Bobaljik (2000), Vocabulary Insertion has been taken to operate over hierarchical structures. But crucial to this is the notion of directionality. Specifically, Bobaljik proposes that Vocabulary Insertion starts at the most deeply embedded node and then works its way incrementally outwards.

Consider a structure sure as (96).

(96) \[ X \]
     \[ Y X_{\text{MORPHO}} \]
     \[ Z_{\text{MORPHO}} \]
     \[ Y_{\text{MORPHO}} \]

Per the standard assumptions of DM, the syntax only manipulates abstract features. Thus, none of these nodes have any phonological features, only morphosyntactic features. Now, VI will operate on Z first, as it is the most deeply embedded node in this structure. This will produce the following structure in (97).

(97) \[ X \]
     \[ Y X_{\text{MORPHO}} \]
     \[ Z_{\text{PHONO}} \]
     \[ Y_{\text{MORPHO}} \]

In (97), Vocabulary Insertion has Inserted a Vocabulary Entry into Z. In Bobaljik’s system, this is an overwrite operation, meaning that the phonological features overwrite the morphosyntactic ones. This has important implications for what allomorphic contexts a particular node can have. For instance, when Y is undergoing Vocabulary Insertion, it can be sensitive to only the morphosyntactic features of X, and to only the phonological features of Z. Likewise, when VI was operating on Z, Z could show allomorphic variation due to morphosyntactic features of Y.

---

40 See also Merchant and Pavlou (To Appear), who reach a similar conclusion independently from data in Cypriot Greek.
and Z, but not to their phonological features, as they have not undergone VI and thus do not have any phonological features.

This introduces the notions of inward and outward sensitive allomorphy in addition to phonologically conditioned and morphosyntactically conditioned allomorphy. The interactions between these four kinds of allomorphy lead to the following typology of allomorphy.

(98)  **Typology of Allomorphy from Bobaljik (2000)**

<table>
<thead>
<tr>
<th></th>
<th>Inward Sensitive</th>
<th>Outward Sensitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonologically Conditioned</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Morphosyntactically Conditioned</td>
<td>X</td>
<td>✓</td>
</tr>
</tbody>
</table>

Thus, if an allomorphic pattern on a node $\alpha$ is *phonologically* conditioned, the rule which governs its exponence may only reference the phonological features of more deeply embedded nodes. This is because these are the only phonological features that have been introduced at that point in the derivation. Likewise, if another allomorphic pattern on a node $\beta$ is *morphosyntactically* conditioned, then it must be outward sensitive, not inward.

One of these predictions seems to be wrong, namely the absence of inward sensitive morphosyntactically conditioned allomorphy. In fact, it seems to be quite common. Take, for example, the following English plural suffix cases.

(99)  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>fox  -es</td>
</tr>
<tr>
<td>b.</td>
<td>*fox -en</td>
</tr>
<tr>
<td>c.</td>
<td>ox  -en</td>
</tr>
<tr>
<td>d.</td>
<td>*ox -es</td>
</tr>
</tbody>
</table>

Here it is clear that the allomorphy demonstrated by the plural suffix is not phonologically conditioned, but still inward sensitive. Thus, it cannot be the case that Vocabulary Insertion overwrites morphosyntactic features. Instead, it must simply add phonological features to the node’s morphosyntactic features, which crucially remain available to shape further insertions.

But still, Vocabulary Insertion is conceived of as operating on hierarchical structures containing no phonological features until after a node has undergone Vocabulary Insertion. Additionally, Vocabulary Insertion operates on one terminal node at a time in a step by step fashion, starting from the most deeply embedded node and working up. Thus, our predictions about what types of allomorphy are possible is amended in (100).

(100)  **Amended Typology of Allomorphy from Classical DM**

The result of (100) is quite robust, with practically no attested cases of outward sensitive phonological conditioned allomorphy attested. Therefore the system developed here will ideally be consistent with that overall conception.

41 Assuming the rather common structure in (i).

(i)  

```
  #  #  #  #
/  ox /  ox /  ox
 `-en
```

42 See Deal and Wolf (In press) for a possible counterexample.
Here I take the position that Insert happens over the linear structure\textsuperscript{43}. I propose that Vocabulary Insertion makes no reference to notions like ‘inward’ or ‘outward,’ only to ‘left’ and ‘right.’ How can this system replicate the result in (100)?

First, I propose that directionality in Insert (either left→right—or right→left) is parametrized for a given language. For Irish, Vocabulary Insertion must operate from left→right, so that in a sequence of morphemes \(<M1\sim M2\sim M3\ldots>\) the exponent of M2 can depend on the exponent of M1. We have seen that C is at the left edge of the verbal complex and that its exponent may be a triggering or a non-triggering complementizer, an option which has consequences for the form of the T\textsuperscript{HIGH} and the Root’s exponents. But as we have also seen, there is no unifying generalization governing which exponents of C are triggering and which are non-triggering. Rather, morphological class membership of Irish complementizers seems to be a feature solely of particular Vocabulary Entries, not of morphosyntactic feature bundles. Therefore, in order for a dependent form to be Inserted, C must already have been. Otherwise, the system would have no way of knowing if a given C were triggering or not without resorting to an ad hoc [±TRIGGERING] feature.

Given this, let us return to the verbal complex in (93), reproduced below in (101), along with the table of Matched Vocabulary Entries from (94).

\begin{equation}
(101) \text{ Linearized Morphosyntactic Structure }
\end{equation}

\begin{equation}
(102) \text{ Matched VEs for (101)}
\end{equation}

\begin{tabular}{|l|l|l|}
\hline
Phonologically Conditioned & Inward Sensitive & Outward Sensitive \\
\hline
Morphosyntactically Conditioned & ✓ & ✓ \\
\hline
\end{tabular}

Following the claim that Insert in Irish moves left→right over a linearized morphosyntactic structure such as (101), the first node to undergo Insert will be C. This will Insert the triggering complementizer an\textsubscript{T}, yielding (103-104).

\textsuperscript{43} This should not be interpreted as ‘Insert happens over linearized strings.’
Insertion at C has important consequences for insertion of the next step, as indicated in (104) where crossed out entries signal Vocabulary Entries whose insertion at T_{HIGH} is rendered impossible by what has happened at C. These VEs are rendered impossible because \( an_t \), a triggering complementizer, has been Inserted, with the consequence that all of the Matched VEs which are incompatible with a triggering complementizer are out of the running.\footnote{Strictly speaking, (104c-d) are not incompatible with triggering complementizers. Instead, they will always lose due to the Subset Principle (Halle, 1997) in these cases, making them functionally impossible.}

Continuing from left to right, the next node which will undergo Insert is \( T_{HIGH} \). Here, we see that two VEs are possible, that for \( -r \) in (104b), and that for the portmanteau dependent form in (104e). By whatever universal principle requires portmanteaux to be used when available, (104e) will win. This is what we want, as we know that dependent forms always win out over \( -r \). Therefore, the second step to Insert is shown in (105-106). The dotted arrows in (105) indicate that \( \sqrt{\text{SEE}} \) and \( v \) are simultaneously Inserted as part of the portmanteau.

Now that the portmanteau dependent form has been Inserted, all of the nodes contained within it are simultaneously Inserted as well.
Therefore, the next node is $T_{\text{LOW}}$. By whatever mysterious principle which requires portmanteaux when available, the portmanteau synthetic form -ős in (106j) will correctly be inserted over the analytic ending in (106k). This derives the final, and correct, structure, in (107)\(^{45}\).

\[(107)\quad \text{After Final Insert} \]

\[
\text{Pol} \\
\text{T}_{\text{HIGH}} \quad \text{Pol} \\
\text{C:Q} \quad \text{T}_{\text{HIGH}}:\text{PAST} \\
\text{an}_T \quad \text{bhfac-} \\
\quad \text{Pol} \quad \text{T}_{\text{LOW}} \\
\quad \text{v} \quad \text{Pol} \quad \text{T}_{\text{LOW}}:\text{PAST}, 2SG \\
\quad \text{v} \quad \text{SEE} \quad \text{v} \quad \text{ıs} \\
\]

Thus, we have correctly derived the Irish verbal complex from (83d).

The next feature of this system which I would like to highlight concerns the very common phenomenon of ‘rightward sensitive phonological allomorphy.’ The system developed here allows us to replicate the general result of Bobaljik (2000) in allowing inward-sensitive phonologically conditioned allomorphy without any notion of ‘inward’ in Vocabulary Insertion.

To see this, recall the behavior of another exponent of $T_{\text{HIGH}} \, \text{do}$, from §3.3.1, \text{do} exposes $T_{\text{HIGH}}$ when it occurs before a vowel initial verb, and it may occur both when no complementizer precedes $T_{\text{HIGH}}$, or when a non-triggering $C$ does, as in (108). The proposed morphosyntactic structure for (108) is provided in (109). Note that the $C$ which is exposed by $a^t$ is given the morphosyntactic features proposed for this node by McCloskey (2002), demonstrated above in (39)\(^{46}\).

\[(108)\quad a^{t_{\text{EXT}}} \, \text{d'} \, ñl \, ñs \ldots \]

\[
\quad a^t \, \text{do drink -2SG,PAST} \\
\quad \ldots \text{that I drank…} \]

\[(109)\quad \text{Pol} \\
\quad \text{T}_{\text{HIGH}} \quad \text{Pol} \\
\quad \text{C}:\text{EPP, OP} \quad \text{T}_{\text{HIGH}}:\text{PAST} \\
\quad \text{Pol} \quad \text{T}_{\text{LOW}} \\
\quad \text{v} \quad \text{T}_{\text{LOW}}:\text{PAST}, 1SG \\
\quad \text{v} \quad \text{DRINK} \quad \text{v} \\
\]

\(^{45}\) I have also included the trivial step of inserting Pol.

\(^{46}\) Note that in this derivation the analytic VE from (106k) is not included.
The morphosyntactic structure in (109) leads to the following Matched Vocabulary Entries.

(110)  **Matched VEs for (109)**

<table>
<thead>
<tr>
<th>C: EPP, OP</th>
<th>T_{HIGH}:PAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (&lt;C: \text{EPP, OP} \rangle \leftrightarrow d^l_{\text{NT}})</td>
<td></td>
</tr>
<tr>
<td>b. (&lt;T_{\text{HIGH}}: \text{PAST} \rangle \leftrightarrow -r) / C_{\text{T}}</td>
<td>___</td>
</tr>
<tr>
<td>c. (&lt;T_{\text{HIGH}}: \text{PAST} \rangle \leftrightarrow do) / ___ V</td>
<td></td>
</tr>
<tr>
<td>d. (&lt;T_{\text{HIGH}}: \text{PAST} \rangle \leftrightarrow \emptyset)</td>
<td></td>
</tr>
<tr>
<td>\sqrt{\text{DRINK}}</td>
<td>f. (&lt;\sqrt{\text{DRINK}} + v \rangle \leftrightarrow \emptyset)</td>
</tr>
<tr>
<td>\text{v}</td>
<td>h. (&lt;v\rangle \leftrightarrow \text{igh})</td>
</tr>
<tr>
<td></td>
<td>f. (&lt;\sqrt{\text{DRINK}} + v \rangle \leftrightarrow \emptyset)</td>
</tr>
<tr>
<td>T_{LOW}:PAST, 1SG</td>
<td>j. (&lt;T_{\text{LOW}}: \text{PAST, 1SG} \rangle \leftrightarrow -as)</td>
</tr>
<tr>
<td>Pol</td>
<td>k. (&lt;\text{Pol}\rangle \leftrightarrow \emptyset)</td>
</tr>
</tbody>
</table>

Just as before, the first node to be Inserted is C, as it is the leftmost in the structure. Nothing particularly exciting happens in this step, as only one VE is Matched to this node. This leads to (111), and the updated possible VEs in (112).

(111)  **After First Insert**

(112)  **Matched VEs for (111)**

<table>
<thead>
<tr>
<th>T_{HIGH}:PAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (&lt;T_{\text{HIGH}}: \text{PAST} \rangle \leftrightarrow \emptyset) / C_{\text{T}}</td>
</tr>
<tr>
<td>b. (&lt;T_{\text{HIGH}}: \text{PAST} \rangle \leftrightarrow do) / ___ V</td>
</tr>
<tr>
<td>c. (&lt;T_{\text{HIGH}}: \text{PAST} \rangle \leftrightarrow \emptyset)</td>
</tr>
<tr>
<td>\sqrt{\text{DRINK}}</td>
</tr>
<tr>
<td>\text{v}</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>T_{LOW}:PAST, 1SG</td>
</tr>
<tr>
<td>Pol</td>
</tr>
</tbody>
</table>

At this step, the non-triggering complementizer \(d^l_{\text{NT}}\) is Inserted. This obviates the entry in (112a), as indicated by it being crossed out.

Now, the next node to be Inserted is T_{\text{HIGH}}. Now, we can see that we have two choices, (112b) and (112c). Crucially, one of these Vocabulary Entries (112b) makes reference to phonological material to its right. But at this stage of the derivation, there is no phonological material to its right. Therefore, Insert does not have the information it needs to decide between them; for all intents and purposes, (112b) and (112c) are identical from the
standpoint of Insert. Therefore, it fails to make a choice, and both persist until the next step of the derivation. This is shown in (113), which also completes this Insert derivation.

(113)

The point of letting Insert fail to make a choice is to allow for the phonological component of the grammar to optimize the representation it receives. Considering that the point of Vocabulary Insertion is to create a representation which the phonology can manipulate, it should not be so strange that the phonology can choose a winner through its own principles, as is the common approach in the OT literature (Mester 1994; Mascaro 2007; Henderson 2012; Bennett To Appear, inter alia). This is shown below in (114)\(^{47}\).

(114)

<table>
<thead>
<tr>
<th>/a{do, θ}/όλας</th>
<th>ONSET</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [ád’όλας]</td>
<td></td>
</tr>
<tr>
<td>b. [aόλας]</td>
<td>*!</td>
</tr>
</tbody>
</table>

Thus, this result replicates the general result of Bobaljik (2000) as far as inward-sensitive phonological allomorphy is concerned, although it is reconceived as rightward-sensitive phonological allomorphy.

This conceptualization of how Insertion takes place requires a new typology of allomorphy, schematized below in (115).

\(^{47}\) Recall from the discussion above that do has been our representational stand-in what normally surfaces as just d’ leaning to the left of the verb as shown in (114a).
Of course, this typology needs to be tested against the actual empirical landscape, though at first blush it has
the potential advantage of being more fine-grained than Bobaljik (2000)’s in (100). Whether this turns out to be a
benefit or a pathology remains to be seen.

A further benefit of the system developed here is that it allows languages to parametrize whether Insertion
will move from right-to-left or left-to-right. This flexibility can allow it to easily account for some well-known
paradoxes in Vocabulary Insertion which have been reported previously in the literature, like in Korean, as reported
in Chung (2007). In this work, Chung argues extensively for the morphosyntactic structure in (116) for verbal
complexes in Korean, and for the VEs in (117).

(116) Matched VEs for (116)

Hon

Neg

Neg:NEG √EXIST

Hon:Hon

The important thing about these entries in (117) is that there are two conflicting portmanteaux which both
contain the root √EXIST. One, kyek- in (117b), contains Neg, while the other, eps- in (117d), contains Hon.

Within Chung (2007)’s system, he uncovers a problem. If insertion of portmanteaux is dependent on hierar-
chical structure, as in both INT theories (§4.1) and Spanning (§4.2), then we strongly predict that (117b) should
win. This is because √EXIST and Neg form a constituent to the exclusion of Hon, while √EXIST and Hon do not
form a constituent to the exclusion of Neg. Interestingly, this prediction does not pan out, and the portmanteau <
√EXIST + Hon:Hon > is required. This is shown in (118b).

(118) Matched VEs for (116)
Chung calls this a paradox because it requires apparently counter-cyclic Fusion. If Fusion is sensitive to morphosyntactic constituency, then the \( \sqrt{\text{EXIST}} \) should Fuse with Neg first. This would lead to (118a). The paradox becomes how to enforce this counter-cyclic Fusion.

We can easily account for this pattern using Chung’s structure and VEs in (116-117) if we allow Vocabulary Insertion to operate from right-to-left in Korean, unlike in Irish\(^48\). Thus, the first step in the derivation would Insert Hon. Again, by whatever principle requires portmanteaux to be used where available, the portmanteau in (117b) will be selected. Then Neg is Inserted independently, using the VE in (117c). These two steps are collapsed in (119).

(119)

Thus, the general framework presented here is sufficiently flexible that apparently anomalous cases like Irish and Korean can easily be accounted for by way of one operation that every Realization theory needs: Vocabulary Insertion.

7 Conclusion and Closing Thoughts

In this paper, we examined the intricacies of the Irish verbal complex. Interestingly, these intricacies and idiosyncrasies, such as the Split-T system and successive Lowering of C to Pol, give rise to structures where two closely related notions can be disentangled: morphosyntactic constituency and linear adjacency. Here, we saw that the prediction made by Bobaljik in (120) turns out to be true.

(120) If an exponent X expresses \( \sqrt{\text{ROOT}} + F_1 \ldots F_n \), for some features \( F_1 \ldots F_n \), then \( F_1 \ldots \) must be adjacent to (contiguous with) \( \sqrt{\text{ROOT}} \).

“The empirical content of this prediction\(^49\) is that, all else being equal, if there are portmanteaus expressing \( \sqrt{\text{ROOT}} + F_1 \) in some language, then for any nonportmanteau root \( \sqrt{\text{ROOT}}_2 \), \( \sqrt{\text{ROOT}}_2 \) and \( F_1 \) will be adjacent (and where the portmanteau includes a group of features, these will be contiguous with the root).”

Bobaljik (2012), pg. 149

Furthermore, Bobaljik’s prediction turns out to be true in such a strong way that our very theory of Vocabulary Insertion needed to be adjusted so as to allow reference to linear information. This theory, developed in §6 predicts

\(^48\) There is a tantalizing generalization to be made. Irish is strongly a head-initial language in which I have argued VI operates from left-to-right. By contrast, Korean is a strongly head-final language in which VI seems to operate from right-to-left. While we do not have enough data points to make any strong claims about this correlation, there is a possible, and quite interesting, observation to be made here.

\(^49\) Bobaljik rightly attributes this prediction to Radkevich (2010). It is also worth noting that her objections to Williams (2003) and Caha (2009) are, probably, also applicable here. But her objections rely solely on negative evidence; hopefully, the data presented here render such concerns unnecessary.
a more fine-grained typology of allomorphic interactions. Additionally, complex operations such as Fusion can be jettisoned.

While this theory is clearly quite powerful, Irish provides a particularly restrictive way of constraining it. All of the Irish interactions, as well as the Korean interactions of Chung (2007), take place within a single Extended Projection. Therefore, we can propose the following locality constraints for portmanteaux phenomena in (121), reproduced from (6) above.

\[(121) \quad \text{In order for two nodes } \alpha \text{ and } \beta \text{ to be contained within a portmanteau:}\]

\begin{enumerate}
  \item \( \alpha \) and \( \beta \) must be linearly adjacent (Bobaljik, 2012).
  \item \( \alpha \) and \( \beta \) must be in the same Extended Projection (Williams, 2003; Bye and Svenonius, 2010; Svenonius, 2012; Merchant, 2015).
\end{enumerate}

Many questions remain open though. First, much recent work, such as Embick (2010); Bye and Svenonius (2010) has highlighted the importance of morphological cycles. In the present work, no such cycles were detected. In fact, our understanding of Irish requires that the post-syntactic morphological component of the grammar be able to see the entire verbal Extended Projection. Otherwise, there would be no way for C-lowering to occur, as phase heads should never be able to Lower into, or interact with morphologically at all, with the material in their Spell-Out domain. Probing these domain issues in more depth is the obvious next step.

Thus, in this paper I have argued strongly for the role of linear information in Vocabulary Insertion. Crucially though, structural information is just as available to the system as linear information. What these portmanteaux phenomena do is show that Vocabulary Insertion uses this linear information. This does not entail that it cannot and will not be sensitive to structural or hierarchical information in other places. So, the well-known Distributed Morphology slogan of “Syntax all the way down” is upheld and maintained to be correct. Rather, here I have sought to highlight that “Syntax all the way down” does not entail “Only syntax all the way down.”

\[50\] The theory developed here is also completely compatible with allomorphic interactions which make reference to purely morphosyntactic features, as at no stage in the derivation is any information erased. Therefore, there is no a priori reason why Vocabulary Insertion should not be sensitive to this information. A truer counterexample would be to find a case of portmanteau in which the contributing nodes could not be shown to be linearly adjacent.
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