

# PROSODIC EVIDENCE FOR THE SYNTACTIC CONSTITUENCY OF DEMONSTRATIVES IN IRISH\*

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## 1. Introduction

What is the syntactic constituency of demonstratives in Irish, and can phonological evidence be used to motivate the correct syntactic analysis? In this article, I use prosodic evidence from pitch accents (as in 1) and lenition patterns (as in 2) in Connemara Irish to argue that demonstratives in Irish take DP complements, with subsequent DP-raising, similar to the syntactic analysis put forward by McCloskey (2004).<sup>1,2</sup>

- (1) a.  $\begin{matrix} \text{LH} & & \text{LH} & & \text{HL} & & & & \text{HL} & & & & \\ ['\gamma\text{am.s}\dot{\text{ə}} & \text{n}\dot{\text{ə}} & 'k\text{a}:\text{.l}\dot{\text{i}}.\text{n}\dot{\text{i}} & '\gamma\text{v}.\text{r}\dot{\text{i}}.\text{x}\dot{\text{ə}} & \text{l}\dot{\text{e}}\text{s}\dot{\text{t}} & \text{n}\dot{\text{ə}} & \text{ho}:\text{.g}\dot{\text{a}}:\text{.n}\dot{\text{i}} & \text{l}\dot{\text{e}}.\text{s}\dot{\text{i}}\text{ku}:\text{.l}\dot{\text{ə}} & ] \\ \text{dance.PST} & \text{DEF} & \text{girl.PL} & \text{spirited} & \text{with} & \text{DEF} & \text{young.boy.PL} & \text{shy} & \\ \text{'the spirited girls danced with } & \mathbf{the} & \text{shy boys'} & & & & & & \end{matrix}$
- b.  $\begin{matrix} \text{LH} & & \text{LH} & & \text{HL} & & & & \text{HL} & & \text{HL} & & \\ ['\gamma\text{am.s}\dot{\text{ə}} & \text{n}\dot{\text{ə}} & 'k\text{a}:\text{.l}\dot{\text{i}}.\text{n}\dot{\text{i}} & '\gamma\text{v}.\text{r}\dot{\text{i}}.\text{x}\dot{\text{ə}} & \text{l}\dot{\text{e}}\text{s}\dot{\text{t}} & \text{n}\dot{\text{ə}} & \text{ho}:\text{.g}\dot{\text{a}}:\text{.n}\dot{\text{i}} & \text{l}\dot{\text{e}}.\text{s}\dot{\text{i}}\text{ku}:\text{.l}\dot{\text{ə}} & \text{u}:\text{d}] \\ \text{dance.PST} & \text{DEF} & \text{girl.PL} & \text{spirited} & \text{with} & \text{DEF} & \text{young.boy.PL} & \text{shy} & \text{INVIS} \\ \text{'the spirited girls danced with } & \mathbf{yonder} & \text{shy boys'} & & & & & & \end{matrix}$

The data in (1) illustrate that the presence of a demonstrative forces a pitch accent onto the object noun, which is absent without the demonstrative. An explanation for this fact, owing to phonological (and thus syntactic) structure is provided in section 3.

- (2) a.  $[\text{ta}:\ \{\text{ə}\text{n}\ \text{v}\text{r}\text{o}:\text{g}\ \ 'j\text{i}.\text{blax}/*'g\text{j}\text{i}.\text{blax}\}_{\text{DP}}\ \ 'd\text{e}.\text{s}\dot{\text{ə}}.\text{h}\dot{\text{ə}}]$   
be DEF shoe tattered mend.VA  
'the tattered shoe is mended'

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<sup>1</sup> Abbreviations used in glossing forms in this article are: DEF = definite article; PROX = proximal demonstrative; PST = past tense; 1, 2, 3 = 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> person; M/F = masculine/feminine; VOC = vocative particle; INVIS = invisible demonstrative; DIST = distal demonstrative; VA = verbal adjective; PASS = passive; COP = copula

<sup>2</sup> I use LH and HL phrasal accents to remain consistent with the description used in Elfner (2015) which informs the background of the present study. These accents can be treated as equivalent to L\*+H and H\*+L respectively in a TOBI or IViE transcription system – see Dalton and Ní Chasaide (2007) for details.

- b. [ta: {əɲ vʀo:g} DP 'gʲi.blax/\*'jɪ.blax]  
 be DEF shoe tattered  
 'the shoe is tattered'
- c. [ta: {əɲ vʀo:g} DP sʲɪn/\*hɪn 'dɛ.sʲə.hə]  
 be DEF shoe DIST mend.VA  
 'that shoe is mended'
- d. ['fada {o: hɪn/\*sʲɪn} PP]  
 long from DIST  
 'long ago'

The data in (2) show that phonological words undergo initial consonant weakening (lenition) when parsed inside a single syntactic phrase/phonological phrase as seen by the modifying adjective in (2a) vs. the copular equated adjective in (2b) and the referential demonstrative in (2c) vs. the demonstrative pronoun in (2d).

Demonstrative elements in various languages have been the subject of an increasing amount of scholarship over the last few decades in the syntactic literature, including studies of Celtic demonstrative constructions (Dryer 1992; Giusti 1992, 1996, 2015; Cinque 1994, 2005; Szabolcsi 1994; Bernstein 1997, 2008; Diessel 1999, 2006; Panagiotidis 2000; Brugè 2002; Rosen 2003; McCloskey 2004; Leu 2008; Sybesma and Sio 2008; Wiltschko 2009, 2014; Adger 2013; Bliss 2013; Roehrs 2013; Windsor 2014, to appear; Roberts to appear). Despite all of this attention, there is little consensus on the syntactic constituency of demonstratives. Authors such as Dryer (1992), Panagiotidis (2000), Sybesma and Sio (2008), and Bliss (2013) suggest that demonstratives may not represent a homogeneous cross-linguistic category, behaving as heads in some languages and adnominal modifiers in others. Author authors such as Leu (2008), Roerhs (2013), and Giusti (2015), argue that demonstratives are universally modifiers though the specifics of their proposals somewhat differ; specifically, whether demonstratives are compositional, adjectival elements or not – Giusti (2015) argues that i. demonstratives specifically realize a referential index of a nominal expression (NE), but adjectives denote properties which are not referential (*cf.* Hinzen 2012; Windsor 2016); and, ii. demonstratives are not historically derived from other elements, but are the base from which other elements are derived (*cf.* Diessel 2006). Even within analyses of the Celtic languages, consensus is lacking. Brugè (2002) (on a comparison of Irish to Spanish) and Roberts (to appear, on Welsh) argue that demonstratives are the external argument of the  $n^0$ , and McCloskey (2004, on Irish) and Adger (2013, on Scottish Gaelic) argue that demonstratives are located high in the nominal domain, above  $D^0$  – their arguments are elucidated in section 2.

The remainder of this article is organized as follows: In the remainder of this section, I introduce the unfamiliar reader to the various constructions in Irish that demonstratives may occur in. Section 2 recounts the various syntactic analyses of Celtic demonstratives. Section 3 presents evidence for the constituency of demonstratives based on pitch accents. Section 4 discusses lenition effects and adnominal modifiers and Section 5 concludes.

## 1.1 Demonstratives in Irish

When demonstratives in Irish are merged as part of an NE, they are necessarily merged with a definite DP.<sup>3</sup> The definite DP that the demonstrative takes may be in the form of: A noun introduced by a definite article (3a), a personal pronoun (3d), a noun introduced by a vocative particle (3e), or a proper noun (3f) (McCloskey 2004). When the demonstrative is merged as part of an NE, it always appears post-nominally:

- (3) a. an tráchtas beag seo  
 DEF thesis smallPROX  
 ‘this short thesis’
- b. an tráchtas beag  
 DEF thesis small  
 ‘the short thesis’
- c. \*tráchtas beag seo  
 thesis smallPROX
- d. chuaigh [sé seo] ar seachrán  
 go.PST 3.SG.M PROX on stray  
 ‘this person went astray’ (McCloskey 2004:2)
- e. a bhean udaí  
 VOC woman INVIS  
 ‘hey you over there (addressed to a woman)’ (McCloskey 2004:3)
- f. bhí urradh as miosúr i nGoll seo  
 be.PST strength out.of measure in Goll PROX  
 ‘This guy Goll had astonishing strength’ (McCloskey 2004:2)

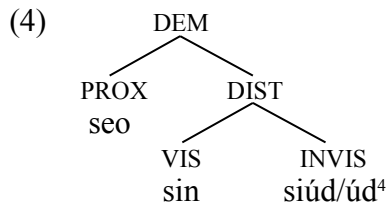
As can be seen from the data in (3b), NEs can freely occur without a demonstrative, but if a demonstrative is present, the nominal expression must be definite, otherwise it is ungrammatical (as in 3c).

Demonstratives in Irish are typically divided into three categories: proximal, distal, and most distal – what I will term here as this invisible demonstrative, as represented in the following feature diagram:

<sup>3</sup> Demonstratives may also be used independently as a pronoun:

- i. sin é an chaoi is diabhal neart air  
 DIST COP DEF way & devil strength on-3.SG.M  
 ‘that is the way, and there’s devil all can be done about it’

This article will not address demonstrative pronouns, only post-nominal demonstratives as part of an NE.



## 2. Previous analyses

In this section, I briefly outline the previous analyses that have been given to demonstrative constructions in Celtic languages and some of the data which have supported those analyses.

### 2.1 DemP as Spec,*n*P

Brugè (2002) investigated the syntax of demonstratives in Spanish, extending her analysis briefly to Irish for cross-linguistic support. She analyzed data such as that in (5) with a PP within the NE to conclude that demonstratives must be specifiers low in the nominal structure, perhaps in Spec,*n*P as the external argument of the N.

- (5) an leabhar (\*seo) nua seo faoi teangeolaíocht (\*seo)  
 DEF book (PROX) new PROX under linguistics (PROX)  
 ‘this new book on linguistics’ (Brugè 2002:41, corrections my own)

Similar data from Welsh illustrating the position of the demonstrative to the left of the PP was used by Roberts (to appear) who reached the same conclusion:

- (6) y llun hwn o’r dyn gan Picasso  
 DEF picture this of-DEF man by Picasso  
 ‘this picture of the man by Picasso’ (Roberts to appear:12)

Given the assumption that the PPs in (5) and (6) are complements to the N, Roberts proposes the following structure for the Celtic DP:

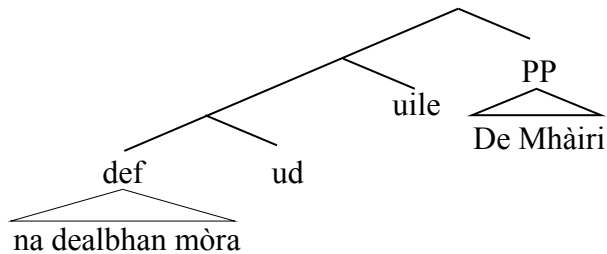
- (7) [DP D [NumP Num [nP (AP)\* [nP DemP n [NP N (PP) (CP) ]]]]

However, the idea that these PPs are complements to the N is not a foregone conclusion. Adger (2013) argues that PPs in Celtic cannot be low in the structure of the NE (sister to the N) precisely because they occur after demonstratives and the universal quantifier *uile* in Scottish Gaelic – elements which scope over a definite DP (detailed in the subsequent section). He provides the structure in (8) to explain the ordering of NE elements:

<sup>4</sup> Ó Siadhail (1995:36) notes that *úd* is used with nouns, and *siúd* is used with pronouns. McCloskey (2004:2) includes the form *udaí* among the most distal demonstratives; it is a variant form found in some dialects, but not in those under investigation here.

- (8) na dealbhan mòra ud uile de Mhàiri  
 the pictures big that all of Mhàiri  
 ‘all those big pictures of Mhàiri’

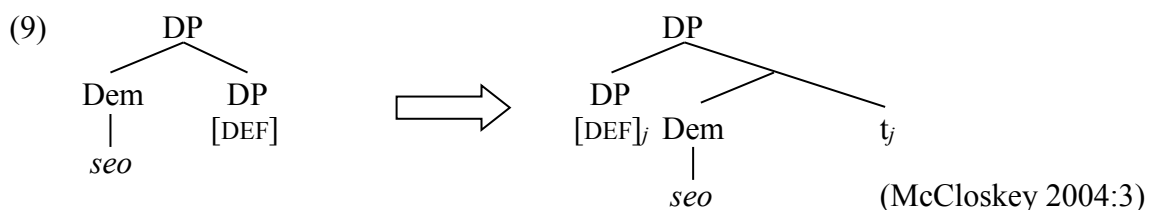
(Adger 2013:110)



Adger argues for the above structure because of the fact that Celtic demonstratives must take a definite DP (indicated by a definite article, a proper name, or a pronoun as shown in example 3 above). If they were low in the structure, we would require some sort of definiteness feature on the  $\text{Dem}^0$  which would be checked by merging a definite  $\text{D}^0$  above the N. In the case of proper names and pronouns (possibly themselves in Spec,DP according to Giusti 2015), we would further need a way to stipulate that the definite  $\text{D}^0$  be null, but still satisfy the definiteness feature of the  $\text{Dem}^0$ . The other possibility, according to Adger, is a right-branching node above DP. However, this analysis too has its own problems; as McCloskey (2004:3) notes, “many theoreticians would be unwilling to cede to a given head the ability to determine whether its complement appeared on the right or on the left.” As a result, McCloskey suggests that the demonstrative realizes a syntactic head, possibly labeled D itself, which takes a definite DP as its specifier (possibly moved from within its domain). I discuss this proposal in the following section.

## 2.2 Recursive D

McCloskey (2004), recognizing that Irish is a rigidly head-initial language, argues for a movement analysis that moves a definite DP from the complement of the demonstrative D to the specifier of that phrase:



To account for this movement, according to McCloskey, we need to assume that there is some property (or feature) on the demonstrative which drives this movement (what I have claimed previously (Windsor 2014) is a  $u\text{DEF}$  feature – see also Doyle 2002 for a possible motivation for this type of movement). Leaving the explanation of the movement aside, McCloskey explores the motivation for assuming this type of structure. Perhaps his most compelling argument for this comes from a coordination test.

As detailed in §1.1., demonstratives in Irish obligatorily take a definite DP. Therefore, if the demonstrative were merged in a position internal to the DP, we would

expect it to be impossible that a single demonstrative could scope over a coordinated DP, but that is exactly what is found:

- (10) na fir agus na mná sin ...  
 the men and the women DEM  
 ‘those men and women’ (McCloskey 2004:4)

With an internally merged demonstrative, we expect the argument in (10) to be ungrammatical, expecting instead *na fir sin agus na mná sin* to be the only grammatical way to express ‘those men and those women’.

These data certainly support the analysis that the demonstrative is merged external to the DP, but can we motivate a movement analysis (à la McCloskey 2004 or Windsor 2014) over a head-final demonstrative ordering (à la Adger 2013) based on the syntax? McCloskey motivates the raising analysis by looking at modifier stranding of *eile* ‘other’; he provides two possible orderings of demonstrative constructions containing *this form* in Irish:

- (11) a. an fear **seo eile**  
 the man DEM other  
 ‘this other man’  
 b. an fear **eile seo**  
 the man other DEM  
 ‘this other man’ (McCloskey 2004:5)

McCloskey suggests that these data (not grammatical in all dialects, but many) may be explained if *eile* is stranded when the DP moves to the specifier of the demonstrative in (11a), but moves with the DP in (11b). However, if *eile* is an adnominal modifier, it is possible that it simply has multiple attachment sites (if both orderings are in fact possible in a given dialect) similar to the distribution of the Irish universal quantifier, *uile*, which may appear pre- or post-nominally:

- (12) a. gach/an **uile** dhuine eile  
 each/DEF every person other  
 ‘everyone else’  
 b. na duine sin **uile**  
 DEF people DEM every  
 ‘all those people’

We are now left with the problem of choosing an analysis based on which theoretical problem we take the least issue with: If we opt for a DP-raising analysis (à la McCloskey 2004 or Windsor 2014) we must allow for comp-to-spec movement; if we opt for a right-headed demonstrative projection (à la Adger 2013) we must allow this (and only this) head to select a different direction for its complement; or, if we opt for a demonstrative in the low structure of the DP (à la Roberts to appear) we must explain how (possibly through the Economy Principle *cf.* Giusti 2015) coordination of two DPs with a deictic interpretation is possible with only one pronounced demonstrative. Thus,

with conflicting syntactic evidence, I turn to new prosodic evidence to see if any of these analyses can be motivated by the interface with PF.

### 3. Evidence from pitch accents

#### 3.1 Background

Elfner (2015) provides a test for prosodic constituency in Connemara Irish (CI) based on the distribution of pitch accents. In addition to providing the constraints which match prosodic structure to syntactic structure, she demonstrates that two types of pitch accents are aligned with specific phonological structure.

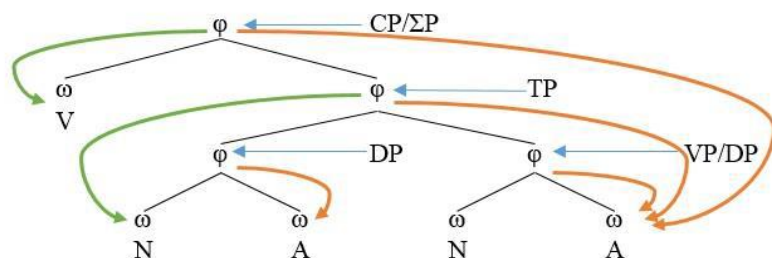
- (13) Distribution of HL phrase accents in CI (Elfner 2015:1180)  
HL phrase accents associate with the stressed syllable of the rightmost word in every [phonological phrase] ( $\varphi$ ).
- (14) Distribution of LH phrase accents in CI (Elfner 2015:1182)  
LH phrase accents associate with the stressed syllable of the leftmost word in every  $\varphi_{\text{Non-min}}$ .

The way in which Elfner successfully predicts the prosodic constituency that these phrasal accents associate with is by matching prosodic structure to syntactic structure through Match Theory (Selkirk 2009, 2011).

- (15) Syntax-prosody mapping principle (“MATCH-PHRASE”) (Elfner 2015:1177-8)  
 $X^{\text{Max}} \rightarrow \varphi$   
For every syntactic phrase (XP) in the syntactic representation that exhaustively dominates a set of one or more terminal nodes  $\alpha$ , there must be a prosodic domain ( $\varphi$ ) in the phonological representation that exhaustively dominates all and only the phonological exponents of the terminal nodes in  $\alpha$ .

Using the mapping principle in (15) combined with the known distribution of phrasal accents from Elfner’s previous work, prosodic constituency (with the appropriate phrasal accents) of a transitive sentence in CI can be computed as follows:

- (16) Phrasal accents in a transitive sentence in CI



In the diagram in (16), green (leftward descending) arrows indicate the distribution of LH phrasal accents and orange (rightward descending) arrows indicate the distribution of HL phrasal accents. The relevant syntactic nodes matched as  $\varphi$ s are indicated as provided in Elfner (2015). Of important note is the matching of the adjective as a  $\omega$  rather than a  $\varphi$  in

Elfner's analysis. She argues that, due to a BINARY-MINIMUM constraint, the AP is too small to constitute a  $\phi$ .

(17) BINARY-MINIMUM( $\phi$ ) (Elfner 2015)

A  $\phi$  constituent in the prosodic representation must dominate a minimum of two  $\omega$ .

Because non-binary APs instantiate only  $\omega$ s in the prosodic structure means that demonstratives would be expected to do the same, unless they can be shown to create additional structure.

I use these previous analyses as a jumping off point for the exploration of the prosodic constituency of demonstratives in CI explored in detail throughout the remainder of this section.

### 3.2 Predictions

Crucial to the current study is the observation that of all the phonological words ( $\omega$ ) in (16) above, the only one that lacks a pitch accent is the object noun; from this observation, I derive predictions for pitch accents based on the presence of a demonstrative and what the prosodic constituency it creates is. Bennett et al. (2016:224) provide evidence that despite being a closed class (functional) element in the syntax, demonstratives are realized as  $\omega$ s in the phonology. This fact allows us to make predictions for the realization of phrasal accents on demonstratives and object nouns:

(18) Low demonstrative prediction

If demonstratives are low within the structure of the NE (Spec,*n*P), they will create a  $\omega$  adjacent to the adjective- $\omega$ , taking the HL accent from the adjective- $\omega$ .

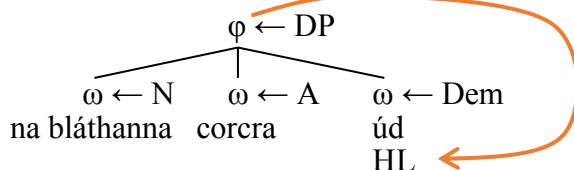
(19) High demonstrative prediction

If demonstratives are high within the structure of the NE (sister to the DP), they will create a recursive  $\phi$  which gives the demonstrative its own HL accent, and forces an LH accent onto the object noun.

The two predictions in (18) and (19) follow from the structures assumed by each of the previous syntactic analyses. The syntactic and matched phonological structures for the Dem as Spec,*n*P (à la Brugè 2002; Roberts to appear) is provided in (20), and for the Dem as sister to the DP structure (à la McCloskey 2004; Adger 2013; Windsor 2014) is provided in (21):

(20) Dem as Spec,*n*P prediction

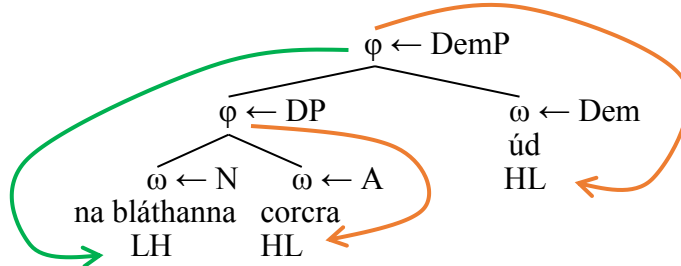
phlucáil an buchail dóighiúil [na bláthanna corcra úd]  
 PST-pick DEF boy handsome DEF.PL flower.PL purple.PL DEM.INVIS  
 'the handsome boy picked yon purple flowers'





## (21) Dem as sister to DP prediction

phlucáil an buchail dóighiúil [na bláthanna corcra úd]  
 PST-pick DEF boy handsome DEF.PL flower.PL purple.PL DEM.INVIS  
 ‘the handsome boy picked yon purple flowers’



Given these two predictions made by the possible structures argued for in the syntactic literature, I now show that the results of an elicitation experiment support the DP-external analysis advanced in McCloskey (2004), Adger (2013), and Windsor (2014). Deciding between the structures proposed by each of those three authors is later discussed in section 4.

### 3.3 Methodology

Forty target nouns containing two to five syllables each were inserted into a sentence template as in (22) either in subject or object position. When the nouns appeared in object position, they were composed both with, and without, a demonstrative modifying it.

## (22) Elicitation sentence template

V (N A) (N A (Dem))  
 subject object

This created 120 sentences for elicitation which were interspersed with 40 filler tokens consisting primarily of *seanfhocail* ‘proverbs’ for a total of 160 elicitation sentences. The sentences were presented in isolation using a powerpoint presentation on a laptop screen with the suggested English translation following on the subsequent slide. Consultants were asked to read each sentence in Irish, and then say the sentence as naturally as they could, as if speaking to a friend (following the same elicitation methodology as in Elfner 2015).<sup>5</sup> The consultants were additionally encouraged to provide any corrections on the grammar of the sentences they read. Elicitation sessions were conducted through the medium of Irish. Recordings were made on a Zoom H4n digital stereo recorder with internal microphones set to 90° and the recording level also set to 90. A wind sock was used over the microphones to eliminate any background noise. The recordings were subsequently imported into Praat for analysis.

The analysis presented in the next section provides the results from the elicitations of two 18-25yo female native speakers of CI from An Ceathrú Rua, Co. Galway.

<sup>5</sup> Evidence that consultants were naturalizing the sentences into their own idiolect comes from the fact that they would alter the type of initial mutation presented orthographically into their own dialect (orthographic stimuli were presented using *an caighdeán oifigiúil* ‘the official standard’); either supplying an initial mutation that was not orthographically present, or changing eclipsis mutation for lenition or vice versa.

### 3.5 Analysis

The stressed syllable and immediately following syllable were measured in each of the target nouns for the minimum, mean, and maximum Hz; the difference between the two syllables was calculated, as was the difference in total Hz range.<sup>6</sup> Totals were coded based on the sentence type: Subject, Object (without a demonstrative), or Demonstrative (occurring with the object noun). Additionally, tokens were also visually inspected for the presence or absence of an LH pitch accent on the target noun.

The sums of the visual inspection of pitch accents on the target noun are provided in table 1, divided by condition type. The numbers are counts of target nouns which did or did not display an LH pitch accent, not divided by speaker:<sup>7</sup>

	Subject Condition	Object Condition	Demonstrative Condition
Presence of LH pitch accent on stressed syllable	57	21	55
Absence of LH pitch accent on stressed syllable	19	55	21

**Table 1:** Realization of pitch accents on target nouns.

The sums provided in Table 1 were analyzed using a chi-squared test in R (2013) with the following result: [ $\chi^2 = 44.3183, p < 0.001$ ]. As can be seen in Table 1, there was very little difference in the realization of pitch accents between the subject condition (where they were expected to appear based on Elfner 2015) and the demonstrative condition (where it was predicted that they would appear if the demonstrative created additional prosodic structure external to the DP- $\phi$  as in example 21 above). This is contrasted with the object condition where the target noun appeared without a demonstrative, and was rarely realized with a pitch accent (again, as predicted by Elfner 2015).

In order to verify the findings of the visual inspection in Praat (Boersma and Weenink 2016), the Hz measurements were also tested using a Generalized Linear Model (GLM). Examining the Subject vs. Object conditions, a significant interaction was found between the mean Hz, and the Hz range with a result of [ $G^2(1,151) = 21.4993, p = 0.005$ ]. The same interaction in the Subject vs. Demonstrative conditions was not found to be significant with a result of [ $G^2(1,151) = 3.714, p = 0.084$ ].

The results of the empirical study conducted with a GLM corroborate the results of the visual inspection for pitch accents analyzed with a chi-squared test. Both of these tests confirm the results of Elfner (2015), showing that there is a significant difference in the realization of pitch accents on target nouns depending on whether they appear in subject or object position. The tests also confirm the high demonstrative prediction in

<sup>6</sup> The difference between syllables was calculated to control for position within the breath group.

<sup>7</sup> Two tokens were removed from the study: *pingin* ‘penny’ was expected to be pronounced as [ˈpɪŋ.ən] but was consistently produced as [pin] by both speakers, making the comparison of adjacent syllables impossible, and *foclóirín* ‘wordlist’ was removed because it was not elicited in all conditions. This resulted in a total of 76 tokens (38 sentences from each of the two consultants) in each of the three conditions.

(19) by showing that there is no significant difference between target nouns depending on whether they appear in subject position or object position with a demonstrative.

Because the high demonstrative predication provided in (19) was confirmed, it is reasonable to conclude that the demonstrative in CI is the sister to the DP, rather than being merged in Spec,*nP* (pace Roberts to appear). However, the analyses of McCloskey (2004) and Adger (2013) differ in that McCloskey uses a raising analysis to get the correct linear order, and Adger argues for a right-headed demonstrative. In the next section, I use evidence from a different phonological process, lenition, to argue in favour of McCloskey's analysis which raises the DP to the specifier of the demonstrative.

#### 4. Lenition as evidence for constituency

This section looks at two analyses of word order relative to demonstratives in Irish NEs: i. that the order D>N>A>Dem is derived by raising the DP to the specifier of the demonstrative (à la McCloskey 2004 and Windsor 2014), or ii. that the demonstrative is somehow special from other syntactic elements in the language, that it is right-headed (à la Adger 2013). As stated previously, both of these analyses encounter theoretical problems: The raising analysis suffers from requiring a feature that would cause complement-to-specifier raising of the DP, and the right-headed analysis requires a caveat that one specific element in a rigidly head-initial language be head-final. However, evidence from initial consonant weakening, lenition, will be shown to support the raising analysis of McCloskey (2004), with one minor alteration as in Windsor (2014).

It is a well-known conclusion in the literature on Irish initial mutation that lenition occurs on elements which are closely associated with the preceding word (Thurneysen 1966; Windsor 2012). Thus, we can use lenition patterns to examine the constituency of syntactic elements within the NE as follows:<sup>8</sup>

- (23) a. [an **bhr**óg      **gh**ioblach]<sub>DP</sub>  
           DEF shoe        tattered  
           'the tattered shoe...'
- b. tá [an **bhr**óg]<sub>DP</sub> **gi**oblach  
           be DEF shoe        tattered  
           'the shoe is tattered'
- c. [an **bhr**óg      **gh**ioblach]<sub>DP</sub> seo  
           DEF shoe        tattered            PROX  
           'that tattered shoe...'

As can be seen in the example above, when the adjective is inside the DP (as in 23a, c) it is lenited and when it is external to the DP (as in 23b) the radical form surfaces normally (see also Carnie 1991). With no surprise, given the results of the previous section, the demonstrative does not display lenition in (23c) whereas it is outside of the DP.

The lenition facts become important when we attempt to decide between the raising analyses of McCloskey (2004) and Windsor (2014) versus the right-headed analysis of

<sup>8</sup> Lenition is orthographically represented as <h> as the second letter of the word, and I use that convention here for simplicity.

Adger (2013). To support his right-headed analysis of demonstratives in Scottish Gaelic, Adger provides data such as that in (8), repeated as (24) with Irish translation in (25):

(24) na dealbhan mòra ud uile de Mhàiri  
 the pictures big that all of Màiri  
 ‘all those big pictures of Màiri’ (Adger 2013:110)

(25) na pictiúra mhóra ud uile de Mháire  
 DEF picture.PL big.PL DEM all of Mary  
 ‘all yon big pictures of Mary’

However, unlike the Scottish Gaelic examples that Adger analyzes, in Irish, *uile* can occur pre-nominal as well:

(26) na uile phictiúra mhóra ud de Mháire  
 DEF all picture.PL big.PL DEM of Mary  
 ‘all yon big pictures of Mary’

If we examine the elements that occur immediately after *uile* in (25) and (26), we can see that *uile* does not cause lenition on the preposition *de* in (25) but it does on the noun *pictiúra* in (26). This simple observation leads to the conclusion that *uile* represents a  $\omega$  in the phonological constituent structure that is not separated from the noun by an interceding  $\phi$  boundary, similar to the unlenited adjective in (23b). On the other hand, *uile* is prevented from causing lenition on the preposition in (25) because the PP *de Mháire* is matched as a  $\phi$  which does not include *uile*. The fact that *uile* lenites nouns, similar to adjectives in a compound structure (see Windsor 2011 for details), but may appear either pre-nominally or after the demonstrative suggests that it is an adnominal modifier (possibly in Spec,NumP).<sup>9</sup> Adverbials in Irish may be either left branching or right branching:

(27) a. **uaireanta** thugadh sí fuáil léi...  
 sometimes PST.bring 3.SG.F sewing with.3.SG.F  
 ‘sometimes she brought sewing with her...’ (Mhac an tSaoi 2002:1139)

b. **thughtí** di **uaireanta**...  
 PST.understand.PASS for.3.SG.F sometimes  
 ‘sometimes it occurred to her...’ (Mhac an tSaoi 2002:1139)

If the adnominal modifiers, *uile* ‘all’ and *eile* ‘other’ can be analyzed in the same way as adverbials —that they are adjunct phrases which may be either right or left

<sup>9</sup> Although rare, I was able to find one instance of *uile* preceding a numeral in an NE in an 1817 printing of the New Testament suggesting it to be above the Num<sup>0</sup> (several other instances were ignored because they were separated by a coma, although the numeral was still lenited). (see *An Biobla Naomhthta* on google books for a searchable version):

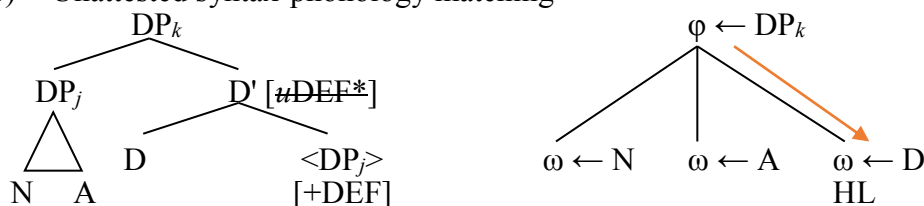
i. ... uile dhá threabh dhéag Isreal  
 all two tribe ten Israel  
 ‘all the twelve tribes of Israel’ (Genesis 49:28)

branching— then we can account for the various possible realizations of their linear orders (as seen in examples 11 and 12 above).

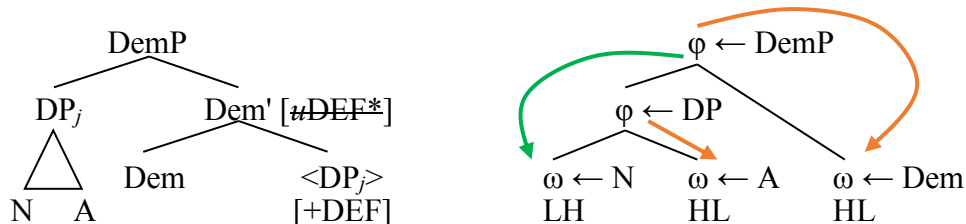
The analysis that I put forward here is to say that adverbial/adnominal modifiers are not restricted in the directionality of their syntactic branching, allowing right or left branching from the constituent that they modify. This does not contradict the fact Irish is rigidly head-initial, nor does it make demonstratives syntactically unique in Irish in that they would be the only syntactic element that is head-final. This analysis can be supported by the lenition facts as well: As shown in example (23) above, when a non-binary syntactic element is merged inside the DP, it is realized as a  $\omega$ , which causes lenition on any adjacent words; as seen in (29a), *uile* causes lenition of the following noun *dhuine* when it appears pre-nominally, showing that it is a syntactic head inside DP.

The lenition and multiple linearization facts discussed above support the analysis of comp-to-spec movement of the DP around the demonstrative head, as suggested by McCloskey (2004), except for one problem – the label of the demonstrative itself. McCloskey suggests that the demonstrative may be a  $D^0$  itself, part of a recursive DP structure. However, the phonological lenition facts suggest that the demonstrative must not be part of the D-projection. Once again, looking at the examples in (23) above, we note that elements outside of the DP do not receive lenition, while separate syntactic elements inside the DP do. In Windsor (2012), I formalized this process by stating that the right edge of a  $\omega$  caused lenition on an adjacent left edge of a  $\omega$ , provided that there were no intervening boundaries between the two, namely a  $\phi$ . I assume, based on the previous work by Elfner (2015), that a DP in the syntactic representation is match to a  $\phi$  in the prosodic representation because of the syntax-prosody mapping principle given in (15) that states that  $X^{\text{Max}} \rightarrow \phi$ . If the demonstrative were part of a recursive DP structure, the demonstrative would still be within the maximal projection of the DP, and it would be the higher DP (the one containing the demonstrative) that would map to the  $\phi$ , thus locating the demonstrative inside the DP- $\phi$  where we would expect to see lenition of its initial consonant. As seen in example (2) in the introduction of this article, that prediction is not borne out. Instead, I argue that, based on the phonological evidence presented here, the demonstrative cannot be part of the extended projection of the DP, and must be a member of a separate syntactic category, what I label DemP:

(28) Unattested syntax-phonology matching



(29) Attested syntax-phonology matching



A recursive DP structure (as in 28) incorrectly predicts the distribution of pitch accents and predicts that demonstratives should display lenition at their left edge in this structure, which is likewise not attested. Therefore, I conclude that Irish nominal expressions must have raising of the DP to Spec, DemP in order to satisfy a strong *uDEF* feature. This explains why Demonstratives obligatorily take a definite DP; because, otherwise, they would be left with an unchecked feature and crash. It also explains the attested word order without specifying that a single syntactic category must be able to choose the direction of its complement opposite to every other syntactic category in the language.

## 5. Conclusion

In this brief article, I have provided empirical evidence from an elicitation experiment which suggests, based on the distribution of pitch accents, that the demonstrative must be external to the DP. This evidence was further supported by lenition evidence that suggests that demonstratives must be part of a recursive prosodic phrase ( $\varphi$ ). The phonological evidence presented in this article supports the previous syntactic analysis of Irish demonstratives presented in McCloskey (2004) except that, rather than suggesting that the demonstrative may in fact be a D-element itself, I argue that it is necessarily a different syntactic category from D, what I suggest labelling, DemP.

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