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WH-operators & multiple copy spell-out in modern Irish

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Abstract. Irish has different complementizers depending on whether a clause is formed by an Ā-dependency without movement, via movement, or via binding of a resumptive pronoun. Despite these distinctions, these Ā-complementizers share the same phonological content, with the only difference being the mutation they trigger on the following verb. This paper reanalyzes these data, proposing that the verb mutation reflects the true realization of the C^0 head, while the segmental content represents the WH-operator in Spec-CP. This paper analyzes this example of Multiple Copy Spell-Out and explores its implications for the order of operations in Syntax and Morphology.

Keywords. Ā-Syntax; Resumption; Mutation; Irish; Anti-Agreement; Morphology

1. Introduction. In the literature on resumption, Irish has been extensively discussed and in many ways is considered the poster child of languages that employ resumption strategies in Ā-dependencies (Sells 1984; Deprez & Hale 1985; McCloskey 1985, 1990, 2001, 2002; Vaillette 2002; Maki & Ó Baoill 2005, 2007; Ó Baoill & Maki 2012; Oda 2012; Maki & Ó Baoill 2014; McCloskey 2016, 2017a, 2023). Classically, Irish has been analyzed to have different complementizers depending on whether a clause is not formed by an Ā-dependency, is formed by an Ā-dependency via movement, or is formed by an Ā-dependence via binding of a resumptive pronoun (McCloskey 1990, 2002, 2017a).

This paper proposes a reanalysis of Irish resumption arguing for overt WH-operators and Multiple Copy Spell-Out. Taking into account the analysis of Irish resumption argued for in McCloskey (1990, 2002), the present research reinterprets the data based on additional morphological evidence. Specifically, I argue that Irish shows an overt realization of the WH-operator in Ā-dependencies. I propose that the complementizers McCloskey identifies should be split into two morphemes: the WH-operator (realized as *a* /ə/) and the C^0 head (realized as ^{L} for the Lenition Mutation or ^{N} for Eclipsis/Nasalization Mutation). The realization of C^0 depends on whether its specifier is filled by Internal or External Merge. This analysis is significant as it clarifies the mechanics and order of various morphosyntactic dependencies and operations like Chain Reduction, Multiple Copy Spell-Out, and the morphosyntax of WH-operators, while staying consistent with McCloskeys work and subsequent studies by other authors (Maki & Ó Baoill 2005, 2007; Oda 2012).

This paper is structured as follows. Section 2 reviews Irish Ā-dependencies and their relevant morphological alternations. Section 3 outlines McCloskey (1990, 2002)'s previous analysis of these dependencies. Section 4 presents evidence that McCloskey's complementizers are morphologically complex, comprising the WH-operator and the Ā-dependency complementizer (mutation). Section 5 demonstrates how this analysis provides evidence for Multiple Copy Spell-Out in Irish Ā-dependencies. Section 6 explores three possible analyses for resolving Multiple Copy

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Spell-Out in Irish, concluding that a feature-checking analysis best accounts for the data. Section 7 concludes with implications and directions for future research.

2. Background. Irish distinguishes three types of embedded clauses: one without an Ā-dependency, one with an Ā-dependency formed via movement (Internal Merge), and one with an Ā-dependency formed via binding of a resumptive pronoun by a WH-operator. McCloskey (2002) differentiates between two Ā-complementizers–a^{L} for movement dependencies and a^{N} for resumptive dependencies. These complementizers are homophonous (/ə/) and differ only in the mutation they trigger on the following verb (Lenition, ^{L}, or Eclipsis, ^{N}). These mutations are common in Irish grammar, causing specific phonological changes (Table 1 and Table 2).

Table 1: Lenition (^{L})

Phonemes	Lenited Form
pˠ, pʲ	fˠ, fʲ
bˠ, bʲ	vˠ ~ w, vʲ
mˠ, mʲ	vˠ ~ w, vʲ
fˠ, fʲ	— (deletes), ʲ
t̪ˠ, t̪ʲ	h, hʲ
d̪ˠ, d̪ʲ	ɣ, ʝ~ j
s, ʃ~ ɕ	h, hʲ
n̪ˠ, n̪ʲ	nˠ, nʲ
l̪ˠ, l̪ʲ	lˠ, lʲ
c, ɟ	ç, ʝ~ j
k, g	x, ɣ

Table 2: Eclipsis (^{N})

Phonemes	Eclipsed Form
pˠ, pʲ	bˠ, bʲ
bˠ, bʲ	mˠ, mʲ
fˠ, fʲ	vˠ, vʲ
t̪ˠ, t̪ʲ	d̪ˠ, d̪ʲ
d̪ˠ, d̪ʲ	n̪ˠ, n̪ʲ
c, ɟ	ɟ, ɲ
k, g	g, ŋ

Thus, there is a three-way distinction among verbal forms (1)-(3).[1]

(1) *póg-ann sé* /pˠoːg-ənˠ̪ ɕeː/
kiss-PRES 3.M.SG
'he kisses' (neutral)

(2) *a **ph**óg-ann sé* /ə fˠoːg-ənˠ̪ ɕeː/
a^{L} kiss-PRES 3.M.SG
'he kisses' (relative clause with gap)

(3) *a **b**póg-ann sé* /ə bˠoːg-ənˠ̪ ɕeː/
a^{N} kiss-PRES 3.M.SG
'he kisses' (relative clause with resumption)

Having established the relevant Mutations that a verb undergoes following the two complementizers, it is time to turn to various constructions under investigation in this paper.

2.1. NO Ā-DEPENDENCY. The simplest type of embedded clause does not involve an Ā-dependency and is headed by the complementizer *go*.[2]

[1] All data unless otherwise cited comes from the author's fieldwork with a native speaker of the Connemara Dialect of Modern Irish.

[2] Embedded clauses in Irish can be headed by different complementizers depending on clause type (e.g., declarative vs. interrogative) or polarity (affirmative vs. negative). For simplicity, this paper only utilizes the declarative subordinator *go*. Furthermore, most complementizers, except a^{L}, have past and non-past forms, with past being marked by a final *-r* on the complementizer (e.g., *go* for non-past and *gur* for past). After a past-marked complementizer, verbs appear in their lenited form. Note that the Lenition in the past tense and the Lenition after a^{L} are distinct. An exploration of this homophony/syncretism is outside the scope of this paper. For analyses of these mutations, see Ní Chiosáin (1991); Pyatt (1997); Green (2006); Iosad (2014); Pruett (2023, 2024, to appear); Laoide-Kemp (2024) and the references therein.

(4) *cheap mé gu-r phóg sé í*
think.PAST 1.SG C-PAST kiss.PAST 3.M.SG.NOM 3.F.SG.ACC
'I thought that he kissed her'

For example, the clausal complement of many verbs are headed by this complementizer (4).

2.2. DEPENDENCIES WITH A GAP. To form clauses with an Ā-dependency, Irish has two major strategies. The first is a dependency headed by a^L that ends in a gap. Clauses of this type are generally a subject (5) or a direct object relative clause (6). That said, this strategy is utilized in WH-questions (7) and Ā-pied-piping (8) as well. As such, it is clear that a^L is the complementizer used for all clauses that have a gapped Ā-dependency.

(5) *an chéad amhrán$_i$ eile a b**h**eas* ____$_i$ *againn*
DEF.SG first song other a^L be.FUT.REL ____ at.1.PL
'the next song we'll have (lit. the next song that'll be at us)' (McCloskey (2001): 72, (17))

(6) *an ghirseach$_i$ a g**h**oid na síogaí* ____$_i$
DEF.SG girl a^L steal.PAST DEF.PL faries ____
'the girl that the fairies stole away' (McCloskey (2001): 67, (2))

(7) *céacu mac$_i$ a t**h**óg* ____$_i$ *an teach sin?*
which.of.3.PL son a^L raise.PAST ____ DEF.SG house that
'which of the sons built that house?' (McCloskey (2001): 92, (66a))

(8) *is le Siobhán$_i$ a b**h**í mé ag caint* ____$_i$
COP with Siobhán a^L be.PAST 1.SG PROG talk ____
'it is with Siobhán that I was talking' (McCloskey (1990): 233, (90))

In the examples above, the embedded clause is headed by the a^L complementizer when the Ā-dependency ends in a gap. Following a^L, the verb is always lenited, regardless of tense (compare (5) and (6)). This gap strategy is obligatory only when moving the subject of the first embedded clause. This is the Highest Subject Restriction/Constraint (McCloskey 2001, 2002; Ó Baoill & Maki 2012; McCloskey 2017a). Other Ā-dependencies ending in a gap can be interchanged with the resumption strategy, which will be discussed in the following subsection.

Finally, in long distance Ā-dependencies derived via movement, all clauses along the path of movement are headed by a^L (9).

(9) *rud$_i$ a g**h**eall tú a d**h**éanfá* ____$_i$
thing a^L promise.PAST 2.SG a^L do.COND.2.SG ____
'something that you promised that you would do' (McCloskey (2001): 68, (4))

There is, however, another strategy for forming Ā-dependencies in Irish, which in some contexts must be employed instead of the gap strategy.

2.3. DEPENDENCIES WITH RESUMPTION. Not all Ā-dependencies in Irish can be formed by movement and a gap. There are some syntactic positions which do not permit extraction. For example, extraction from within a PP is not grammatical in Irish. As such, if we try to extract *Siobhán* in (8) by stranding the preposition and leaving a gap, the sentence becomes ungrammatical (10).

(10) **is* *Siobhán*$_i$ *a* ***bh****í* *mé* *ag* *caint le* ____$_i$
COP Siobhán a^{L} be.PAST 1.SG PROG talk with ____
Intended: same as (8)

In these situations, instead of forming an Ā-dependency with movement and a gap, Irish can use the a^N complementizer and a resumptive pronoun at the tail end of the Ā-dependency (11).[3]

(11) *is* *Siobhán*$_i$ *a* ***raibh*** *mé* *ag* *caint léi*$_i$
COP Siobhán a^{N} be.PAST 1.SG PROG talk with.3.F.SG
'it is Siobhán that I was talking with her'

This strategy is used in Irish to form an Ā-dependency with a PP internal position (11), a DP internal possessor (12), or optionally the (non-highest) subject (13) and direct object (14).

(12) *an* *fear*$_i$ *a* ***bhfuil*** a_i *mhac ar scoil*
DEF.SG man a^{N} be.PRES 3.M.SG.POSS son on school
'the man whose son is at school (lit. the man that his son is on school)'

(13) *achan rud*$_i$ *a* ***rabh*** *dóchas aca* *go dtiocfadh* *sé*$_i$
every thing a^{N} be.PAST hope at.3.PL C come.COND 3.M.SG.NOM
'everything that they hoped would come (lit. everything that they hoped that it would come)' (McCloskey (2002): 196, (26b))

(14) *an* *ghirseach*$_i$ *a* ***n****goid-eann na* *síogaí í*$_i$
DEF.SG girl a^{N} steal-PRES DEF.PL faries 3.F.SG.ACC
'the girl that the fairies steal her away' (adapted from McCloskey (2001): 67, (2))

And so, the second strategy for forming Ā-dependencies in Irish is to use the a^N complementizer (*ar* in the past tense) and have the tail of the dependency end in a resumptive pronoun. In all situations where the a^L and gap strategy can be used (except the highest subject), this strategy may be used as well. On the other hand, in situations where extraction is not possible, this resumptive strategy is obligatory and the gap strategy may not be used.

2.4. MIXED DEPENDENCIES. Ā-dependencies in Irish can also be formed by mixing the two strategies. For example, it is possible to have a^N as the complementizer at the head of the Ā-dependency chain with all other clauses headed by *go*, as seen in (13). It is also possible to have a^N at the head of the chain being followed by a^L, as in (15).

[3] Notice that the form of the verb *bí* changes to its dependent form *raibh* after the a^N complementizer. For the purposes of this paper the dependent form and Eclipsis are two different realizations of the morphological change seen on verbs following a^N. For an analysis of how Eclipsis and dependent forms of verbs interact see Acquaviva (2014) and Ostrove (2018).

(15) *rud*$_i$ *a* ***raibh*** *dóchas láidir agam* *a* *b**h**í* ____$_i$ *fíor*
thing a^{N} be.PAST hope strong at.1.SG a^{L} be.PAST ____ true
'something that I strongly hoped was true (lit. a thing that there was strong hope at me that was true)' (McCloskey (2002): 196, (31))

Finally, it is possible to have a^{L} head the dependency chain being followed by a^{N}, as in (16).

(16) *faoi pháistí a c**h**eap-adar* *a* ***raibh*** *breoiteacht orthu*
about children a^{L} think-PAST.3.PL a^{N} be.PAST illness on.3.PL
'about children that they thought were ill (lit. about children that they thought illness was on them)' (McCloskey (2002): 198, (37))

This completes the discussion of Ā-dependency strategies in Irish. In the next section we turn to how these patterns have previously been analyzed in the literature.

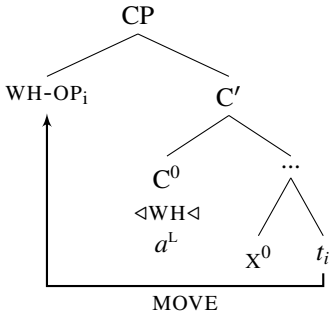
3. Towards an Analysis. Based on the data presented above, McCloskey (1990, 2001, 2002, 2017a) concludes that Irish clauses largely have the following structures (17)-(19), an analysis echoed in Maki & Ó Baoill (2005, 2007); Ó Baoill & Maki (2012); Oda (2012); Maki & Ó Baoill (2014). Vocabulary Items for each complementizer are given using the notation of Heck & Müller (2007); Hewett (2023) as well as the structure where each complementizer appears. In this notation, ◁WH◁ indicates that the C^0 is endowed with a feature triggering Internal Merge of a WH-operator into Spec-CP. The arrows are meant to represent the head of a movement arrow. In contrast •WH• indicates that C^0 is endowed with a feature triggering External Merge of a WH-operator into Spec-CP. Clauses headed by Ā-dependency complementizers can be thought of as having the following derivations (20) and (21) for (17) and (18) respectively.

(17) Ā-Dependency with Movement:
$[_{\text{CP}}$ WH-OP$_{\text{i}}$ a^{L} $[_{\text{TP}}$ ... t_i ... $]]$
$\begin{bmatrix} \text{C}^0 \\ \triangleleft\text{WH}\triangleleft \end{bmatrix} \leftrightarrow a^{\text{L}}$

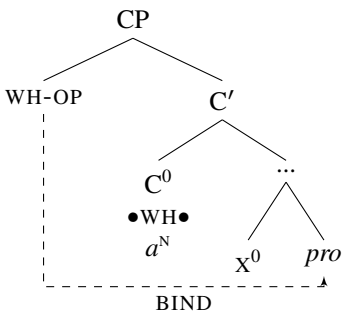
(18) Ā-Dependency with Resumption:
$[_{\text{CP}}$ WH-OP$_{\text{i}}$ a^{N} $[_{\text{TP}}$ ... pro_i ... $]]$
$\begin{bmatrix} \text{C}^0 \\ \bullet\text{WH}\bullet \end{bmatrix} \leftrightarrow a^{\text{N}}$

(19) No Ā-Dependency:
$[_{\text{CP}}$ *go* $[_{\text{TP}}$ ... $]]$
$[\text{C}^0] \leftrightarrow$ *go*

(20)



(21)



The analysis presented in this section is considered to be the standard for Ā-dependencies in Irish. However, as we will see in the next section, this analysis misses the generalization that both of these Ā-dependency complementizers share the same segmental content–namely, both are realized as *a* /ə/. The fact that both of these complementizers share segmental phonological content would imply that they are either accidentally homophonous or that they constitute an example of syncretism. This similarity between the two complementizers deserves a principled explanation.

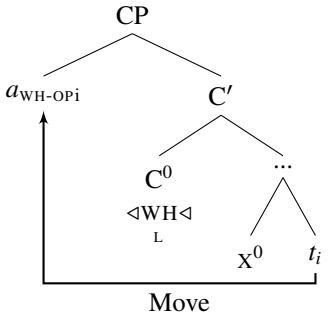
4. Rethinking a^L & a^N. In this section, I argue that the a^{L} and a^{N} complementizers in Irish can be decomposed into the WH-operator *a* and the complementizers $^{\text{L}}$ and $^{\text{N}}$. These two complementizers share the same phonological segment (/ə/), but they differ in the mutation they trigger on the following verb (Lenition for the gap strategy or Eclipsis for the resumptive strategy).[4] In the feature-driven analysis outlined above (17)-(21), $^{\text{L}}$ is associated with the ◁WH◁ feature and $^{\text{N}}$ with the •WH• feature. Given that both Ā-dependency complementizers trigger merge of a WH-operator into its specifier, I propose that the shared segmental content between a^{L} and a^{N} is the realization of the WH-operator and the mutation that surfaces on the following verb is the realization of C^0 (22)-(26).

(22) Ā-Dependency with Movement:
$[_{\text{CP}}\ a_{\text{WH-OPi}}{}^{\text{L}}\ [_{\text{TP}}\ \ldots\ t_i\ \ldots\ ]]$
$\begin{bmatrix}\text{C}^0\\ \triangleleft\text{WH}\triangleleft\end{bmatrix} \leftrightarrow {}^{\text{L}}$

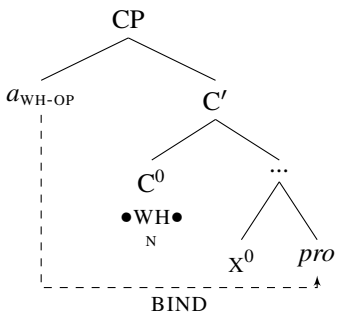
(23) Ā-Dependency with Resumption:
$[_{\text{CP}}\ a_{\text{WH-OPi}}{}^{\text{N}}\ [_{\text{TP}}\ \ldots\ pro_i\ \ldots\ ]]$
$\begin{bmatrix}\text{C}^0\\ \bullet\text{WH}\bullet\end{bmatrix} \leftrightarrow {}^{\text{N}}$

(24) No Ā-Dependency:
$[_{\text{CP}}\ go\ [_{\text{TP}}\ \ldots\ ]]$
$[\text{C}^0] \leftrightarrow go$

(25)



(26)



I next present two pieces of evidence to motivate this morphological analysis. The first piece of evidence comes from the treatment of mutation as its own morpheme (4.1). The second piece of evidence comes from the morphological behavior of *a*, which looks and behaves like a 3rd person pronoun devoid of gender, number, and case features (4.2).

4.1. MUTATION AS A MORPHEME. It is well known that mutation in Irish (and Celtic Languages more broadly) is triggered morphosyntactically and not phonologically (Ó Siadhail 1989; Ní Chiosáin 1991; Duffield 1995; Pyatt 1997; Green 2006; Wolf 2007; Iosad 2014; Pruett 2023; Laoide-Kemp 2024). As such, it has been argued that mutation is morphemic in some way (Ní Chiosáin 1991; Green 2006; Wolf 2007; Iosad 2014; Pruett 2023; Laoide-Kemp 2024). Wolf (2007) and Pruett (2023), following similar proposals by Ní Chiosáin (1991) and Iosad (2014), argue that mutations can be captured as autosegmental phonological feature bundles that correspond to certain morphosyntactic features in a way very much analogous to floating grammatical tones. Pruett (2023) argues that these autosegments can be mapped to morphosyntactic features to construct Vocabulary Items as per Distributed Morphology (Halle & Marantz 1993, 1994). Thus, the autosegment that causes mutation is the realization of a morpheme independent from the syntactic heads that are traditionally considered to be the so-called "triggers" for mutation. Assuming this

[4] Irish is a strict VSO language in that all finite clauses are VSO, even in the presence of a complementizer. Thus, following a complementizer in Irish will immediately be the verb.

analysis, the mutations seen after the Ā-dependency complementizers can be thought to be distinct from the segmental content that is assumed to "trigger" the mutation.

If these mutations are independent morphemes, it might be expected that they surface without the Ā-complementizers. This is, in fact, the case for ^{N} [5], where ^{N} follows almost all complementizers in Irish[6], not just the Ā-dependency complementizer (27).

(27) a. *dá* ***m****bei-feá* *anseo*
if ^{N}.be-COND.2.SG here
'if you were here'

b. *an* ***g****creid-eann* *tú* *é*?
Q ^{N}.believe-PRES 2.SG 3.M.SG.ACC
'do you believe him?'

c. *ceap-aim* *go* ***g****creid-eann* *tú* *é*
think-PRES.1.SG C ^{N}.believe-PRES 2.SG 3.M.SG.ACC
'I think that you believe him'

Since ^{N} follows most complementizers in Irish, it seems hard to justify a position whereby a^{N} is monomorphemic. Such an analysis would suggest that the fact that ^{N} show up following many complementizers is coincidental. I argue, on the other hand, that decomposing complementizers such that ^{N} is its own morpheme better captures this generalized distribution of the mutation. Now it is outside the scope of this paper to derive exactly what the features of this morpheme are. But, it should be clear from the data above that ^{N} has a wider distribution in Irish than just the Ā-Resumption complementizer.[7]

Now, ^{N} always alternates with *-r* depending on whether the following clause is past tense (*-r*) or not (28). This is important because such complementary distribution could mean that these two morphemes occupy the same syntactic position.

(28) a. *an* *fear* *a* ***b****póg-ann* *an* *bhean* *é*
DEF.SG man WH-OP ^{N}.kiss-PRES DEF.SG woman 3.M.SG.ACC
'the man who the woman kisses (lit. the man who the woman kisses him)'

b. *an* *fear* *a-****r*** *phóg* *an* *bhean* *é*
DEF.SG man WH-OP-PAST kiss.PAST DEF.SG woman 3.M.SG.ACC
'the man who the woman kissed (lit. the man who the woman kissed him)'

Some argue that *-r* occupies a different structural position from the C^0 head (McCloskey 2017; Ostrove 2018). If ^{N} shares this position with *-r*, then Eclipsis would be a separate morpheme from the complementizers that seem to introduce it. This supports the idea that mutations in Irish can function as distinct morphemes. Though it is harder to isolate contexts for ^{L} outside of the past tense, if Lenition behaves like Eclipsis, we can hypothesize that ^{L}, like ^{N}, is an independent morpheme. This provides the first argument for decomposing Ā-dependency complementizers.

[5] *-r* replaces ^{N} when the clause is in the past tense. Given this alternation and following McCloskey (2017), I assume that these two morphemes occupy the same syntactic position and differ only in the feature [PAST].

[6] I assume an expanded left periphery in Irish along the lines of the structures proposed by Acquaviva (2014), McCloskey (2017), and Ostrove (2018). I assume ^{N} occupies a position under the highest C^0 head (Q and C in (27)).

[7] The attentive reader will notice that this wider distribution of Eclipsis following complementizers likely means that the Vocabulary Item giving in (25) is too specific by referring to •WH•. Given space considerations, an exploration of these facts must be left for future research.

4.2. *a* AS A PRONOUN. In addition to the evidence that mutation can act independently as a morpheme, there is striking evidence that *a* is a pronoun rather than a complementizer. There are two major pieces of evidence in favor of this conclusion. The first is that *a* has the exact same form as the third person possessive pronoun. The second piece of evidence is the fact that a^L and a^N can incorporate into prepositions in the same way certain pronouns do.

Consider the Irish third person pronouns forms in (Table 3). In possessive constructions, on the other hand, all of the pronouns take the same form–*a*, /ə/. The only change that differentiates gender and number in possessive constructions is the mutation that follows the possessive marker–Lenition for M.SG, nothing for F.SG, and Eclipsis for PL (Table 4).

Table 3: NOM/ACC

	NOM	ACC
M	*sé*	*é*
F	*sí*	*í*
PL	*siad*	*iad*

Table 4: POSS

	Phonological Segment	Mutation
M	*a*	L
F	*a*	–
PL	*a*	N

This pattern is strikingly similar to what we have already observed for the Ā-dependencies. Specifically, there is a set of morphemes that share the same phonological content but are differentiated based on the mutation that follows. Therefore, in line with standard practice, I adopt the null hypothesis that two forms which are identical in form are syncretic (rather than being accidentally homophonous) in the absence of evidence to the contrary (Embick 2003; Mueller 2005).

Now, McCloskey & Hale (1984) and McCloskey (1986) have argued that possessive pronominals are agreement morphology and not true pronouns. Such an analysis, however, does not explain why the mutation that follows a possessive pronominal marker is the exact same mutation that follows the definite article on a noun in the genitive case (29).

(29) a. *an* ***bh****áid*
DEF.SG boat
'the boat (**M.GEN.SG**)'

b. *na* *bróige*
DEF.F.GEN.SG shoe
'the shoe (F.GEN.SG)'

c. *na* ***m****bád*
DEF.PL boat
'the boats (**GEN.PL**)'

Lenition (^{L}) occurs on the noun in the masculine genitive singular, while no mutation occurs in the feminine genitive singular. Eclipsis (^{N}) appears in the genitive plural. This pattern mirrors that of possessive pronouns (Table 4). It seems unlikely that agreement morphemes trigger the same morphophonological alternation as genitive case morphology. Instead, the mutations likely represent the same morphological features specific to the genitive/possessive case. Therefore, I conclude that possessive pronouns are realizations of the pronoun in the genitive case rather than instances of agreement (*pace* McCloskey & Hale (1984) and McCloskey (1986)).

Under this analysis, mutation realizes the gender, number, and case features of the noun or pronoun that is in the genitive case. Thus, the *a* seen in the third person pronouns is the realization of the [D^0, 3] (representing the category and person features respectively). In fact, under the assumption that third person pronouns inherently lack person features altogether (Kayne 2000; Harley & Ritter 2002; Béjar 2003; Adger & Harbour 2006; Ackema & Neeleman 2013), it could be said that *a* realizes simply [D^0] without any other features. This separation of the person feature (or the lack thereof) from the gender, number, and case features of the pronoun can be captured by the fission (Halle 1997; Noyer 1997) rule in (30) in conjunction with the Vocabulary Items in (31)-(34).

(30) PERSON FISSION RULE: *When a feature bundle contains both a person feature and a genitive case feature, fission off the gender, number, and case features to form two distinct terminals one containing the category and person features and the other containing the gender, number, and case features.*
$[D^0, \text{PERSON}, \text{GENDER}, \text{NUMBER}, \text{GEN}] \rightarrow [D^0, \text{PERSON}] + [\text{GENDER}, \text{NUMBER}, \text{GEN}]$

(31) $[\text{M}, \text{SG}, \text{GEN}] \leftrightarrow {}^{\text{L}}$

(32) $[\text{F}, \text{SG}, \text{GEN}] \leftrightarrow \emptyset$

(33) $[\text{PL}, \text{GEN}] \leftrightarrow {}^{\text{N}}$

(34) $[D^0] \leftrightarrow a$

Given this analysis, where a 3RD person pronoun devoid of gender, number, and case features is realized as *a*, I propose that the *a* in Ā-dependencies is also a pronoun devoid of these features. In fact, it has been argued previously that operators are silent pronouns (McCloskey (2002); Hewett (2023); and the references cited therein). Thus, in order to capture this, I propose the following impoverishment rule (Halle 1997) (35).

(35) OPERATOR IMPOVERISHMENT RULE: *When a pronominal feature bundle contains a* WH *feature, impoverish the feature bundle for person, gender, number, and case features.*
$[D^0, \text{WH}, \text{PERSON}, \text{GENDER}, \text{NUMBER}, \text{GEN}] \rightarrow [D^0, \text{WH}]$

I contend that Irish does not have a separate Vocabulary Item for $[D^0, \text{WH}]$ so during Vocabulary Insertion $[D^0]$ is the only feature that can be realized, via the rule in (35) (as per the Subset Principle, Halle (1997)).[8] This renders the surface form of the operator as *a*.[9]

At this point, it has been established that *a* is a form of a third person pronoun devoid of gender, number, and case features. This explains the shared phonological content across possessive pronouns and the *a* that appears in Ā-dependencies. However, it still must be shown that the Ā-dependency *a* has a similar morphosyntactic behavior as other third person pronouns. Here, we can look at the behavior of pronoun incorporation to provide further evidence of the pronominal status of *a*. For example, if the object of a preposition is a DP headed by a possessive pronoun, the pronoun can incorporate into the preposition (36).

(36) a. *a n-athair*
3 GEN.PL-father
'their father'

b. *le bean*
with woman
'with a woman'

c. *aont-aíonn siad*
agree-PRES 3.PL.NOM
len-a n-athair
with-3 GEN.PL-father
'they agree with their father'

As seen in (36b), when the preposition 'with' is followed by a bare noun, it surfaces as *le*. However, when followed by a possessive pronoun (36c), the pronoun forms a single unit with the preposition, which surfaces as *len*. This pattern is also observed when a relative clause follows

[8] I assume that words like *what* and *who* have additional [-HUMAN] and [+HUMAN] features respectively, which distinguish them from the WH-operator.

[9] Notice that this impoverishment rule has many similarities with the impoverishment rules proposed by Baier (2016, 2018) for Anti-Agreement. Thus, there is precedent in the literature for such an impoverishment rule.

the preposition, as in (37), where the preposition surfaces as *len* with the relative operator incorporated into the pronoun much like the possessive pronoun of the same phonological shape. This incorporation of the Ā-dependency *a* differs from the behavior of true complementizers in Irish.

(37) *an fear len-a* ***raibh*** *siad*
DEF.SG man with-WH-OP **N**.be.PAST 3.PL
'the man that they were with'

And so, in this section I have demonstrated that the Ā-dependency complementizers have the same form as other third person pronouns devoid of certain features and they behave like pronouns. I have also argued that mutation can function as an independent morpheme in Irish and as such could occupy its own syntactic head. Therefore, I submit that the traditional a^L and a^N complementizers for Ā-dependencies are truly bimorphemic. One morpheme, *a*, is a third person pronoun, and the other morpheme, $^{L}/^{N}$, is the complementizer.

5. Multiple Copy Spell-Out. The reanalysis proposed in the previous section raises an interesting question with respect to long distance Ā-dependencies. Specifically, in these types of dependencies, *a* appears at the left edge of every clause along the dependency path (38).

(38) *rúitín* a_i *c**h**eap sé* a_i *g**h**ortaigh sé* ____$_i$
ankle WH-OP **L**.think.PAST 3.M.SG.NOM WH-OP **L**.injur.PAST 3.M.SG.NOM ____
'(it was) an ankle that he thought that he (had) injured' (slightly adapted from McCloskey (2016): 7, (7c))

Such a repetition of the WH-operator in every clause constitutes an example of Multiple-Copy Spell-Out, where a copy of the moving element is pronounced multiple times along a dependency chain.

Under Minimalist Syntax (Chomsky 1995, 2000, 2001, 2004, 2008), an element undergoing successive cyclic movement from an embedded clause to Spec-CP of the matrix clause must pass through the edge of each phase along the path of movement. In Irish, however, the copy of the WH-operator only surfaces in Spec-CP, not in other phase edges like Spec-*v*P. This parallels cases of Multiple-Copy Spell-Out, such as in long-distance WH-questions in some German dialects, where a copy of the WH-word appears at the left edge of each clause along the dependency chain (39).

(39) *wen*$_i$ *glaubt Hans wen*$_i$ *Jakob gesehen hat*?
whom thinks Hans whom Jakob seen has
'who does Hans think that Jakob has seen?' (McDaniel 1989)

In languages without Multiple-Copy Spell-Out, like English (40), usually only the highest (or lowest) copy of the WH-element is pronounced.

(40) [$_{CP}$ who$_i$ does [$_{TP}$ John [$_{vP}$ ~~who~~$_i$ think [$_{CP}$ ~~who~~$_i$ [$_{TP}$ Mary [$_{vP}$ ~~who~~$_i$ saw ~~who~~$_i$]]]]]]

Curiously, Irish requires that all CP copies of the WH-operator be pronounced, but never *v*P copies or the lowest copy. From this distribution, it is clear that there is something about the Spec-CP position that is special. Assuming with prior work that successive cyclic Ā-movement proceeds through both CP and *v*P edges, additional assumptions are necessary to explain why copies at the vP edge are not overtly realized.

6. Proposal and Possible Solutions. In this section I consider three possible analyses to account for the Multiple-Copy Spell-Out of WH-operators in Spec-CP in Irish. One possible analysis would be that there is a PF requirement that this position be pronounced. Another analysis would be to say that the copies in Spec-CP are morphosyntactically different from the copies elsewhere in the clause causing the distinct copies to be pronounced. A final possibility is that the Multiple-Copy Spell-Out patterns in Irish are driven by feature checking. I address each of these possible analyses in turn.

6.1. PF REQUIREMENT. To explain why the WH-operator surfaces in Spec-CP but not the base-generated copy or the copy in Spec-*v*P, one could adopt an analysis like Landau (2006), suggesting that there is a PF requirement for Spec-CP to be pronounced. However, what drives this requirement is unclear, as phonology likely cannot determine whether something is in a specifier. This analysis would be stipulative and lack phonological grounding. Therefore, an alternative explanation is needed to better account for the Irish data.

6.2. DISTINCTIVENESS CONDITION AND M-MERGER. Another possibility is that the WH-operator in Spec-CP is structurally different than other copies and this has an influence on which copies are deleted under Chain Reduction. One proposal along these lines is the Distinctiveness Condition (Nunes 2003, 2004).

Nunes assumes Chain Reduction, the deletion of copies, occurs at Spell-Out (post-syntactically). Chain Reduction constitutes an algorithm that deletes any copy c-commanded by a non-distinct copy of itself. The lower copy is deleted if a copy of the moved element c-commands another copy of itself, and the two are indistinguishable. However, if a copy undergoes a morphosyntactic change that makes it structurally distinct from other copies, it cannot be deleted, as it is considered a distinct copy. This is formalized as the Distinctiveness Condition which states that only non-distinct copies can be deleted under Chain Reduction.

In Irish, to ensure that only CP copies of the WH-operator remain, these copies must undergo a morphosyntactic change before Chain Reduction. I propose that this change occurs through M-Merger (Marantz 1984, 1988; Embick & Noyer 2001; Matushansky 2006). When the WH-operator undergoes M-Merger from Spec-CP into the C^0 head, it becomes structurally distinct from other copies. As a result, when Chain Reduction applies, these copies remain while others are deleted. .[10] This analysis suggests that a long-distance Ā-dependency involving WH-operator movement from the internal argument position would proceed as follows.

The WH-operator *a* is initially merged as the complement of the verb. An edge feature is inserted before the *v*P phase undergoes Spell-Out, causing the operator to undergo Internal Merge to Spec-*v*P. The complement of v^0 then undergoes Spell-Out. Before the *v*P Spell-Out domain is fully transferred to PF, Chain Reduction evaluates the chain of operator copies. Chain Reduction must happen before complete transfer to PF since, at that point, the internal structure of the Spell-Out domain will no longer be visible to further morphosyntactic operations. The algorithm determines that the base-generated copy is non-distinct from the copy in Spec-*v*P that c-commands it, leading to the deletion of the lower copy. Then, the Spell-Out domain is completely transferred to PF. Next, the remaining syntactic projections are merged until the next phase head C^0 is merged. Upon merging C^0, the operator in Spec-*v*P moves to Spec-CP to check C^0s WH-feature (for arguments that all intermediate C^0 have a WH-feature see, Hewett (2023); *pace* McCloskey (2002)).

[10] A similar analysis has been proposed for clitic doubling in the *v*P domain (Harizanov 2014; Kramer 2014).

Chain Reduction applies again for the CP Spell-Out domain and the complement of C^0 is transferred to PF. When the next v^0 is merged, the operator moves to Spec-*v*P to satisfy the edge feature inserted at Spell-Out. Before Chain Reduction applies, the copy of the operator in Spec-CP undergoes M-Merger into C^0. Thus, the copy in C^0 is rendered distinct from the copy in Spec-*v*P. As a result, Chain Reduction cannot apply, and the second *v*P Spell-Out domain is transferred to PF. This process repeats until the derivation is complete.

This particular analysis has very specific requirements on the way a derivation must proceed. Crucially, this analysis requires that M-Merger happen before Chain Reduction (otherwise the copies would never be distinct) and before a Spell-Out domain is severed from the larger syntactic structure and sent to PF. Furthermore, this analysis requires that Chain Reduction be able to access the edges of two phases at once in order to compare copies in the specifiers of separate phase heads.

This analysis imposes non-standard requirements on the order of operations in the morphosyntax. Specifically, Chain Reduction, a post-syntactic process, must access two phase edges simultaneously, suggesting that some post-syntactic operations have access to more than just the Spell-Out domain. Typically, post-syntactic operations apply only to what is accessible in a Spell-Out domain, requiring Chain Reduction to operate in the syntax or PF to access more structure than just the Spell-Out domain. Additionally, M-Merger must precede Chain Reduction, creating further complications since M-Merger, a PF operation, would need to occur earlier or access more structure than usually assumed. Thus, appealing to the Distinctiveness Condition (Nunes 2003, 2004) and M-Merger citepmarantz1984, marantz1988, embick2001, matushansky2006 would necessitate significant non-trivial and non-standard changes to the power of morphosyntactic operations and the architecture of the morphosyntactic grammar. Given these complications, a more straightforward account, adhering to standard assumptions about morphosyntactic architecture, is preferable.

6.3. FEATURE CHECKING. A final possible analysis would be one like Baier (2018). Similar to Nunes (2004), Baier argues that Chain Reduction constitutes an algorithm that deletes the tail of movement chains. Unlike Nunes (2004), Baier does not rely on "distinctiveness" to distinguish CP copies from other copies. Instead, he argues that the head of a chain is determined by feature-checking. If a copy checks a feature on a head, it is marked as the head of the chain. In Irish Ā-dependencies, the relevant feature is a WH-feature, checked in CP but not elsewhere. When the operator is merged in Spec-CP, it checks the WH-feature on C^0, marking it as the head of the movement chain, ensuring that only the tail (all non-CP copies) is deleted.

This analysis explains the Irish data by predicting that copies of the WH-operator not checking a WH-feature on a head will be deleted during Chain Reduction. Suppose movement through Spec-*v*P occurs due to an edge feature introduced at Spell-Out to drive movement to a phase edge (Chomsky 2004). In that case, only CP copies of the operator will check the relevant WH-feature of C^0 and thus will always be marked as the head of their dependency chain. This results in the pronunciation of the copy in Spec-CP and the deletion of all other copies. Crucially, the edge feature checking by the copy in Spec-*v*P does not mark it as the head. One possibility for formalizing this is that edge features, being introduced at Spell-Out, are not part of the lexical entry of the head. If only the checking of underlying features (present in the lexical entry) results in head marking, then checking of an edge feature does not result in head marking, ensuring that only the CP copy is marked as the head of the chain.

This solution to the Multiple Copy Spell-Out does not require the stipulation of a PF requirement (Landau 2006) and does not require a complete restructuring of the morphosyntactic grammar to force copies to be distinct (Nunes 2004), which were needed in the first two proposed analyses. Therefore, I provisionally conclude that this feature checking analysis of Multiple Copy Spell-Out is the best way to account for the data.

7. Discussion and Conclusion. In this paper, I argue that the traditional Irish Ā-dependency complementizers, a^L and a^N, are bimorphemic, consisting of the WH-operator *a* and the Ā-dependency complementizers $^{\text{L}}$ and $^{\text{N}}$. I demonstrate that *a* shares the same form as other impoverished third-person pronouns in the language and behaves morphosyntactically like other pronouns, not like complementizers. I also show that mutation in Irish can function independently as a morpheme without needing to be triggered by another morpheme. This justifies decomposing a^L and a^N. This decomposition implies that a copy of the WH-operator appears at the left edge of each clause in a long-distance Ā-dependency, illustrating Multiple Copy Spell-Out. Three analyses of this phenomenon were considered, and I propose that a feature-checking approach best accounts for the data. Unlike other PF and morphosyntactic accounts, this approach avoids the need for stipulative rules or a complete restructuring of the morphosyntactic grammar. Ultimately, this paper demonstrates that Irish Ā-dependencies require further investigation and that treating mutation as an independent morpheme provides valuable insights into the morphosyntax of Irish.

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