A Reanalysis of Munster Irish Stress

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ABSTRACT

Munster Irish exhibits stress patterns unlike other Modern Irish dialects. Rather than landing word-initially, primary stress occurs anywhere within the first three syllables of a word (Stress Window). Munster Irish is a quantity sensitive language, demonstrated by the attraction of main stress to heavy syllables. According to Doherty (1991), these patterns can be explained through the application of Bimoraic Trochees. I find that the data is better accounted for using a version of the metrical foot as proposed by Hammond (1986): the Revised Obligatory Branching foot. In addition to iambic-like foot construction, I propose the creation of a Word Tree Reversal rule. Evidence for this analysis comes from the assignment of primary stress to the second heavy syllable, when two heavy syllables occur contiguously. The application of Hammond's model in conjunction with the Word Tree Reversal rule provides a solid explanation for the Munster Irish data.

1.0 Introduction

Munster Irish is unique among the various dialects of Irish. Unlike other Irish dialects, Munster Irish does not exhibit initial stress. Instead, stress assignment follows specific patterns, related to syllable weight. In §2.0, I describe the most prevalent stress patterns of Munster Irish and a few exceptional forms. I explain Doherty's model (1991), and its advantages and disadvantages (§3.0). The application of Bimoraic Trochees in his model proves unsatisfactory for several reasons (§3.4). I investigate the implementation of iambic feet to explain stress assignment in Munster Irish and find this type of model inadequate also (§4.0). However, I apply Hammond's Revised Obligatory Branching theory (ROB) (1986) with the notion of the iambic foot and argue that the ROB explains significant portions of the Irish data left unaccounted for in Doherty's framework. I conclude that an iambic-type approach is necessary to explain the Munster Irish data and that Hammond's ROB foot provides a satisfactory foundation for the structure of the metrical foot.

2.0 Description of Munster Irish

In order to clarify the issues relevant to creating an adequate model of stress assignment in Munster Irish, I provide a brief description of the data. Syllables with a long vowel or diphthong are considered heavy. Codas are irrelevant when determining syllable weight. The second syllable of a word receives primary stress if it is heavy[1], regardless of the weight of other syllables.

(1)	a.	[asé:ntixt]	*easontaíocht*	'disagreement'	(D[2])
	b.	[fʲi:rhí:]	*fiafriaghe*		(Br)
	c.	[jəirʲi:dʲi:ʃ]	*d'éirighdís*		(Br)

Otherwise, stress falls on the leftmost heavy syllable.

(2)	a.	[mí:ntʲərhə]	*muinteartha*	'related'	(D)
	b.	[ú:dərà:s]	*ughdarás*	'authority'	(D)
	c.	[tunʲké:ri:]	*tuinncéirí*		(Bl)

In the absence of any heavy syllables within the first three syllables of the word, stress the initial syllable.

(3)	a.	[njáməhəx]	*neamhmaithmheach*		(Br)
	b.	[áləgar]	*algar*	'heated talk'	(D)
	c.	[ímʲiʲəkà:n]	*imleacán*	'navel'	(D)

Secondary stress is assigned inside or outside the first three syllables. It falls either on heavy syllables subsequent to the main stress or, when primary stress occurs word-finally, on initial syllables.

(4)	a.	[àkiʲʲi:]	*aclaidhe*	'athletic'	(D)
	b.	[pòtəxá:n]	*potachán*		(Bl)

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[1] Exceptions to this generalization are found in Breatnach (1947), however, they usually involve special forms including: ordinals, the word *pátrún* [pátru:n] and disyllabic verbal forms ending in a long termination. I consider these forms lexical exceptions.

[2] Initials next to the Irish examples provide the source of the data. (D) indicates Doherty (1991), (Bl) is Blankenhorn (1981), (Br) is Breatnach (1947) and so on. Note that data taken from Breatnach (1947) is missing translations due to the fact that English glosses were not provided.

c.	[mʲiarəkàːn]	*méaracán*	'thimble'	(D)
d.	[gùəgadáːn]	*guagadán*	'unsteady thing'	(D)

Syllables containing /ax/ are problematic in Munster Irish. When in second position of a word lacking heavy syllables, /ax/ receives primary stress. If /ax/ occurs anywhere else within a word, it does not receive main stress.

(5) a.	[gʲulkáx]	*giolcach*		(Br)
b.	[kəsáxdəx]	*casachtach*		(Br)
c.	[kógənsəx]	*cogansach*	'Protestant'	(D)
d.	[ʃàxəráːn]	*seachrán*	'avoid'	(D)

Munster Irish only assigns primary stress within the first three syllables of a word[3]. As Doherty (1991) notes, this trisyllabic rule is crucial in stress assignment. Epenthesis occurs in Irish between sonorants and nonhomorganic consonants. In some cases, this process shifts a heavy syllable outside of the first three syllables. This heavy syllable never receives primary stress, even if all other syllables are light.[4] The following examples are taken from Doherty (1991: 117) (the epenthetic vowel is underlined):

(6) a.	[gʲubləxaːn] → [gʲúbə̲ləxàːn]	*gioblachán*	'ragged person'
b.	[adrəgaːlʲ] → [ádə̲rəgàːlʲ]	*eadargáil*	'mediation'
c.	[imʲlʲəkaːn] → [ímʲilʲəkàːn]	*imleacán*	'navel'

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[3] Gussman (1995) provides evidence that stress may fall outside the first three syllables. He cites three examples:

(1) a.	[adərəgúːlə]	*eadargála*	'mediation-gen.sg.'	(G)
b.	[arəmkúːlə]	*armacúla*	'affectionate-comp.'	(G)
c.	[imigeːnúːlə]	*imigéinúla*	'distant-nom.pl.'	(G)

However, these are the only three examples where stress does not land within the first three syllables that I could find. Note that each of these words has an inflectional suffix (in the form of a light syllable) attached. Inflection has been shown to cause stress shift in other languages (Giegerich 1985, Halle & Idsardi 1995). The possible role of inflectional or derivational morphology in Munster Irish stress assignment is beyond the scope of this paper, so I will not take these examples into account in my analysis.

[4] Stress assignment occurring after epenthesis is in direct contradiction to Ní Choisaín's proposal for vowel epenthesis in Irish (1991). She proposes that stress is a motivating factor in epenthesis, i.e., vowel insertion takes place after metrical structure is assigned. I work from the assumption that epenthesis precedes stress assignment because the heavy syllable never receives main stress when moved outside the first three syllables.

The strong tendency for stress assignment to land on heavy syllables points to a quantity sensitive system. The default stress pattern appears to be trochaic in the case of light syllables (3a,b) and iambic when dealing with groups of heavy syllables. Figure (6) summarizes the possible stress assignment patterns in words with four syllables:[5]

(6)

Ĺ L L L	Ĺ L L H
L L H̀ H	L H̀ H H
L H̀ H L	L H̀ L L
L H̀ L H	L L H̀ L
H̀ L L L	H̀ L L H
H̀ L H L	H̀ L H H
H H̀ L L	H H̀ L H
H H̀ H L	H H̀ H H

I look at the different approaches taken to account for Munster Irish stress assignment; both trochaic and iambic accounts are discussed.

3.0 Doherty's Bimoraic Trochees (1991)

3.1 The Analysis

Doherty (1991) proposes the creation of Bimoraic Trochees to explain stress in Munster Irish. In order to explain the tendency of primary stress to land on heavy syllables, this trochaic system is quantity sensitive. A rule of extrametricality and an End Rule supplement the application of feet. Exhaustive footing is not required within this model. Doherty argues that the strengths of his model lie in its explanatory power for the STRESS WINDOW[6] and secondary stress.

A motivating factor in proposing the trochaic foot is that in the absence of any heavy syllables, the leftmost light syllable receives primary stress; trochaic feet are left-headed. Doherty's trochaic foot is constructed around heavy syllables first. Once heavy syllables are footed, initial syllables are used as the basis for foot construction.

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[5] For ease of explanation, H is used to denote a heavy syllable and L indicates a light syllable.

[6] Stress Window is the term Doherty uses to refer to the fact primary stress lands within the first three syllables of a word. This term will be used throughout the remainder of the paper.

(7) Foot: BIMORAIC TROCHEE
(a) Build feet on all heavy syllables.
(b) Build one foot in strictly initial position.
(Doherty 1991: 120)

There are several words for which the trochaic foot is not adequate; words where the first two syllables are heavy, such as [H H H] and [H H L], are problematic. Doherty postulates a rule of extrametricality which states that an initial foot becomes extrametrical when it is "structurally adjacent to another foot" (Doherty 1991: 119).

(8) F → [+ ex]/# ____ F
(Doherty 1991: 119)

(9) a. H H L → [H] [H] L → <H> [H] L → H H L
[du:ri:dər] → [du:] [ri:] dər → <du:> [ri:] dər → [du:rí:dər]
dúraíodar (Br)

b. L L H → [L L] [H] → <L L> [H] → L L H
[arəgu:nʲtʲ] → [arə] [gu:nʲtʲ] → <arə> [gu:nʲtʲ] → [àrəgú:nʲtʲ]
argúint (Br)

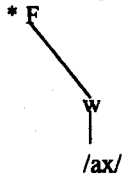
An END RULE states that stress is assigned to the left edge of a word when no adjacency of feet at that edge occurs. Doherty believes that the necessity for the rule of extrametricality is evidence for the foot as a prosodic constituent.

Exhaustive footing cannot occur within this model, otherwise incorrect stress patterns emerge.

(10) * [H] [L L] [H] L L
* [drʲauŋ] [kídʲə] [drʲáuŋ] kidʲə
dreangcaide 'small creature' (D)

To account for the behaviour of the syllable /ax/ in his model, Doherty proposes a ternary weight distinction. When no heavy syllables are present, /ax/ receives primary stress, otherwise it violates TROCHAIC FOOT OPTIMALITY, i.e., /ax/ cannot fill the weak position of a foot.

(11) Trochaic Foot Optimality



(Doherty 1991: 124)

When included in a foot with another light syllable, /ax/ is too heavy to be a nonhead. Realignment of the syllable boundaries takes place and /ax/ becomes the head of a monosyllabic foot.

(12) [L /ax/] L → L [/áx/] L
[təlʲax] dənʲ → təlʲ [áx] dənʲ *tuilleachtain* (Br)

The trochaic foot model as proposed here has its advantages but I show that the problems with such a framework outweigh its benefits.

3.2 Advantages and Disadvantages to the Trochaic Foot Model

A significant advantage of Doherty's model (1991) is that the Stress Window naturally falls out of this analysis. Primary stress always lands within the first three syllables; no stipulations are required. According to Doherty, secondary stress is also adequately covered within this model. Heavy syllables not receiving main stress are assigned to degenerate monosyllabic feet which receive secondary stress. Light syllables within first and second position are assigned a trochee and get secondary stress.

(13) a. L L H → [L L] [H] → Ĺ L Ḧ
[ələta:n] → [ələ] [ta:n] → [àlətá:n]

b. L L L H → [L L] L [H] → Ĺ L L Ḧ
[kluhərəka:n] → [kluhə] rə [ka:n] → [klúhərəkà:n]

Through implementing Trochaic Foot Optimality, Doherty provides an explanation for the ambiguous behaviour of /ax/. However, there are several problems with applying a quantity sensitive variant of the classical trochaic system.

Although the above analysis justifies a portion of the given data, the model has several shortcomings. Any words beginning with #[H H] exhibit primary stress

on the second syllable, even though the first is heavy. This property of Munster Irish significantly weakens Doherty's motivation for using trochaic feet. Doherty accounts for problems like the one just discussed by positing an extrametricality rule. This rule does not fall out of the analysis but is created to make up for the inadequacies of the trochaic foot.

The model requires exhaustive footing to account for secondary stress (13a,b). On the other hand, nonexhaustive footing supports appropriate primary stress assignment (10). Both mechanisms cannot exist concurrently within the same model without causing significant problems.

In order to better justify /ax/ as being heavier than other 'light' syllables, more data needs to be collected to determine the conditions under which it receives secondary stress. If /ax/ receives secondary stress when it follows primary stress in a word, then it is behaving like a heavy syllable and Doherty's position is supported. Unfortunately, such data is difficult to come by. I have only found two examples of /ax/ receiving secondary stress[7], neither one follows primary stress.[8] Since the trochaic foot proves problematic, I look at the possibility of using iambic feet to explain Munster Irish stress.

4.0 Applying the Iambic Foot to Munster Irish

4.1 Motivation for Using the Iambic Foot

The pattern #[H Ḣ] provides strong motivation for right-headed feet, i.e., iambic feet. If the presence of iambic feet is assumed, then the behaviour of /ax/, considered unique under the trochaic foot model, is explicable. Since /ax/ is located in the head position of an iambic foot when it surfaces in the second syllable, it is expected to receive primary stress. At the same time, /ax/ is less likely to bear main stress if it occurs in first or third position; this prediction is borne out by the data.

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[7] One example was found in Doherty (1991), *seachrán* [ʃàxərá:n]. The second example was provided by Edmund Gussmann in a personal communication, *imeachtai* [imàxtí:]. The latter example is discussed further in §5.3.

[8] Due to the rarity of /ax/ appearing after primary stress, this may not be an issue to look at too carefully. Further data could be collected to determine whether in a sequence such as [L Ḣ H] secondary stress appears on the last H, or a stress clash occurs. In the latter case, the last H does not receive secondary stress. If Munster Irish does not allow stress clash, then even if /ax/ is considered heavy, it may not receive secondary stress when adjacent to primary stress. When looking for data, only words with at least one syllable separating /ax/ and the syllable bearing main stress can be included.

(14) a. [təlʲaxdən] → [təlʲáx][dən] *tuilleachtain* (Br)
b. [fʲaməsəx] → [fʲámə][nəx] *feamnach* 'seaweed' (D)
c. [gubələxɑ:n] → [gúbə][ləxa:n] *gioblachán* 'unkempt person' (G)

Munster Irish has many properties of a quantity sensitive language and stress is frequently attracted to heavy syllables within a word. Substantial research by Hayes (1985) shows that languages sensitive to syllable weight are almost always iambic: "prominence contrasts based on duration lend themselves to iambic grouping while prominence contrasts based on intensity lend themselves to trochaic grouping" (1985: 430). Trochaic feet are usually present in languages that are quantity *in*sensitive. The following examples (15a,b,c) show that Munster Irish stress is weight sensitive:

(15) a. [ʃgʲima:lhə] → [ʃgʲimá:l][hə] *sgimeálta* 'skimmed' (D)
b. [tra:nho:nə] → [tra:nhó:n][ə] *tránhnóna* 'afternoon' (D)
c. [sbələxə] → [sbəláx][ə] *spealacha* 'scythes' (D)

Since vowel length determines syllable weight and syllable weight influences stress assignment, it is reasonable to assume that Munster Irish requires iambic footing.

4.2 The Inadequacies of Iambic Footing in Munster Irish

Problems arise with the application of traditional iambic feet. Looking more closely at the HAYESIAN ASYMMETRIES, "[r]ight headed (iambic) parses do not permit a heavy syllable to occupy the dependent position" (Kenstowicz 1994: 587), a significant problem arises. Munster Irish does not exactly fit into the characterization of a quantity sensitive language as illustrated by sequences like #[H Ḥ]. Under iambic footing, main stress in such a grouping surfaces as:

(16) H H X[9] → [H] [H] X → * Ḥ H X
[o:ga:nəx] → [o:] [ga:] nəx → * [ó:ga:nəx] *ógánach* (Bl)

Sequences of [L̀ L L] are problematic as well:

[9] Indicates either a heavy or light syllable.

(17) L L L → [L L] [L] → * L L L
[klʲahʲiniʃiː][10] → [klʲahʲi] [ni] ʃiː → * [klʲahʲiniʃiː]
cleathinisi 'odds and ends' (Br)

Munster Irish needs a system sensitive to the weight of the head; nonheads are not important. Primary stress falls on a heavy syllable, otherwise it defaults to the initial syllable. The traditional iambic foot only takes the nonhead into account. Phonological processes typical of iambic (IAMBIC LENGTHENING) and trochaic (TROCHAIC SHORTENING) languages (Kenstowicz 1994) do not take place in Munster Irish. A model using traditional iambic footing is inadequate due to the nature and number of problems associated with it. After looking at strict notions of trochaic and iambic footing, I investigate an alternative analysis of the metrical foot (Hammond 1986) and apply it to Munster Irish.

5.0 Hammond's Revised Obligatory Branching Parameter

5.1 Hammond's Model of the Metrical Foot

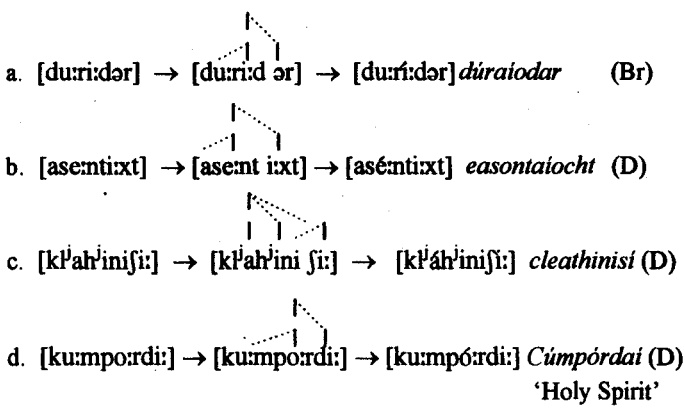
Doherty (1991) addresses Hammond's model when investigating the stress system of Munster Irish but quickly dismisses it as inadequate. Doherty argues that this model cannot satisfactorily explain the Stress Window or secondary stress. However, the REVISED OBLIGATORY BRANCHING PARAMETER explicates a significant amount of data. The three major types of feet, as defined by metrical theory, include quantity-sensitive feet, quantity insensitive feet and QUANTITY DETERMINED feet (or OBLIGATORY BRANCHING (OB) feet) (Kager 1995: 371-372). The last type is similar to the quantity sensitive foot but has restrictions on what constitutes a head or a nonhead. Hammond (1986) argues that the Obligatory Branching foot is too constraining and proposes a construction where only the content of a head is restricted. The REVISED OBLIGATORY BRANCHING (ROB) foot replaces the OB foot in Hammond's model. In an ROB foot, a head must be a heavy syllable, whereas a nonhead can be either heavy or light. The only impermissible foot is [L L]. Unlike Doherty's theory, the implementation of the ROB foot entails exhaustive footing; leftover syllables are assigned to degenerate feet. Hammond uses *n*-ary word trees and constructs them on the roots of feet. Word trees are left- or right-headed. After applying the ROB foot to Munster Irish, I show that it explains more data than Doherty's theory (1991).

[10] The fourth syllable in *cleathinisi* is heavy. It is outside the Stress Window, so we will ignore it in this footing.

5.2 Application of ROB to Munster Irish

Since Munster Irish exhibits primary stress on the second syllable of a word, even when the first is heavy, I assume a right-headed obligatory branching foot. Using some of the examples cited earlier, the right-headed foot can apply without positing a rule of extrametricality. At word level, a left-headed structure is created. Both levels are constructed from left to right[11].

(18)



All of the words receive correct stress patterns when assigned ROB feet and word trees. *Cleathinisí* (18c) exemplifies how the Stress Window is addressed within the parameters set by Hammond's theory. Since words are left-headed, primary stress is never assigned outside the first three syllables. The two levels also assist in predicting secondary stress. Examples (18b) and (18c) both predict secondary stress correctly, i.e., falling on a heavy syllable subsequent to main stress. Contrary to Doherty (1991), the Stress Window falls out naturally and secondary stress is handled effectively within this framework. The syllable /ax/ is handled as a ternary weight distinction in this model, too. When /ax/ appears in the absence of heavy syllables, it outweighs light syllables, then /ax/ becomes the head. Heavy syllables outweigh /ax/ when they appear within the same word and it is treated as a light syllable.

[11] | designates the head (strong) node, while ⋮ designates the nonhead (weak) node. The lower trees are foot level while the ones just above them are the word trees.

(19)

a. [maLəxtuɣax] → [maLəxtuɣax] → [maLəxtuɣax]
mallachtughadh (Bl)

b. [o:ga:nəx] → [o:ga:nəx] → [o:gá:nəx] *ógánach* (Bl)

The ROB foot explains a significant portion of the Munster Irish data. Some of its predictions are problematic and I discuss them below (§5.3).

5.3 Consequences of ROB Applied to Munster Irish

Unfortunately, the model has some problems. The most significant issue is the inability of the ROB foot to account for [L L H]. The ROB theory as I have outlined it predicts the following:

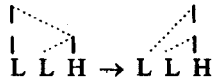
(20)

a. L L H → L L H → * L L H L L H

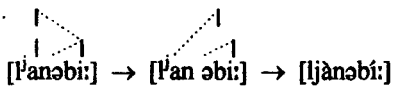
b. [ʲanəbi:] → [ʲanəbi:] → * [ʲánəbi:] *leanbaidhe* (D)
'children'

The primary and secondary stresses in (20b) should be reversed: [ʲànəbí:]. This is the only pattern for which the model creates an ungrammatical structure. The weight of the final syllable influences the formation of the word tree. A tree where the head is lighter than the nonhead would be unstable. As a result of this instability, primary stress moves to the heavier element through a process referred to as WORD TREE REVERSAL.

(21) a. Word Tree Reversal[12]



b.



The second consequence is not as critical. Overproduction of secondary stress occurs in some words. The patterns [Ĺ L L] and [Ĥ L L] emerge with two secondary stresses; [H Ĥ L] and [L Ĥ L] emerge with a secondary stress on the last syllable.

(22)

a. [miːntʲərhə] → [miːntʲərhə] → [míːntjərhə] *muinteartha* (D) 'related'

b. [kʲaŋgəlʲtʲə] → [kʲaŋgəlʲ tʲə] → [kjàŋgəlʲtʲə] *ceangailte* (D) 'tied'

c. [imʲilʲəkaːn] → [imʲ ilʲəkaːn] → [ímʲilʲəkàːn] *imleacán* (D) 'navel'

d. [traːthnoːna] → [traːthnoːna] → [traːthnóːnà] *tráthnóna* (D) 'afternoon'

Words like (22d), [H Ĥ Ĺ], where secondary stress is next to primary stress, exist in Munster Irish. Gussmann (personal communication) cites *imeachtai* [imàxtíː] as one example. Most of the data collected involves only primary stress; far less is known about the assignment of secondary stress. The rules stated in (§2.0) only

[12] As Andrew Carnie pointed out (personal communication), the Word Tree Reversal predicts a violation of the Stress Window in words of the structure [L L H Ĥ]. I found only one word exhibiting this syllabic pattern, *imigéiniúil* 'affectionate' [imʲigʲéːnuːlʲ] (Gussman 1995). This word could be listed as a lexical exception or the Word Tree Reversal rule may be restricted to words of the form [L L H]# (i.e., the heavy syllable is the last in the word). Either alternative does not pose a significant problem for my analysis.

describe where secondary stress must appear. Whether or not it falls anywhere else is not addressed. Since I have no evidence to the contrary, I assume that more than one secondary stress can occur within a word. The application of Hammond's ROB feet has two significant problems but with the proposed Word Tree Reversal rule and insufficient evidence regarding the nature of secondary stress, this model handles all of the available data.

7.0 Conclusion

In comparison to other dialects of Irish, Munster Irish undergoes complex and unique stress assignment. After briefly describing the data from Munster Irish (§2.0), I scrutinized Doherty's classical trochaic system with a quantity sensitive twist (1991) (§3.0). Along with other flaws within the model, the existence of a quantity sensitive trochee is implausible. Hayes (1985) shows that all trochaic systems are quantity insensitive. The possibility of traditional iambic footing was explored but was also proven inadequate (§4.0). Munster Irish requires a foot sensitive to the weight of a head, while the content of its nonhead is not crucial. Traditional iambic feet are too restrictive for the nonhead and not constraining enough for the head. Hammond (1986) proposes an entirely different type of foot. The Revised Obligatory Branching foot restricts heads to heavy syllables while nonheads are light or heavy. In conjunction with the Word Tree Reversal rule I proposed, ROB accurately predicts assignment of primary stress within the Stress Window (§5.0). Secondary stress falls out of this model as well. Although Doherty dismisses Hammond's ROB feet as unsatisfactory, this model accounts for more data than previous theories, with fewer constraints.

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