INTRODUCTION

Throughout the development of Irish there has been, much as in English, a decline in the complexity of nominal morphology. Considerable case syncretism has taken place so that only three cases survive, the nominative the genitive with the semantically anomalous vocative. In the nominal system of Modern Irish the form of the genitive singular is decisive. It has been responsible for organizing the nouns into cases (Christian Brothers 1960, 57ff). These classes are themselves unsatisfactory, a fact noted quite early by Finck (1899, 160), later by Ó Cuív (1956, 86f.) and recently by Wigger (1973, 61), particularly as they are based on orthographical considerations and do not contain a maximum degree of generalization concerning genitive formation.

In Modern Irish nominal morphology the form of the negative is only half of the story, so to speak. The second half is the form of the nominative plural. With all but a few nouns (such as monosyllables with palatalize for the genitive singular) the plural has only one form for both the nominative and genitive case. In all productive formations the plural is not diaform but uniform. But this single form is by no means the same for all declensions. To go by surface forms Irish has a very large number of plural formational types. Despite the plethora of manifestations, however, the number of basic plural types is reducible to two, as will be presently shown, with a very small number of unproductive plurals remaining as remnants of older declensional types. A feature of present day plural formation in Irish is that it is not guided by considerations of gender (a fact noted by Stenson 1979, 518) but by the phonological shape of the nominative singular, the base form. With some words which contain the endings which have not become productive the form of the genitive singular serves as the input for plural formation (see (38) below), but this is a relic of a situation no longer obtaining.

Plurals are characterized on the one hand by remnants of earlier productive types, now fossilized, for a small set of words, and on the other hand by an innovative plural which is spreading by a process of lexical diffusion. Of these the second is of greater theoretical interest as its spread offers a variety of forms which can be examined for phonological or morphological similarity, thus assisting the determination of the principles behind productive plural information. Loan-plurals are not so common in Irish and are at any rate confined to /s/-suffixation, which is straightforward compared with the internal possibilities of plural formation in Irish. It is these that are to be examined here. I have deliberately implied in the title of the present paper that there has been a reduction in allomorphy in Irish plural formation. This is quite definitely the case. In Irish the only plural morphemes are /i:/, (or /i/ in conservative, less colloquial styles, see below) and the change in the value of the feature [palatal] with the final consonant of monosyllables. But there are a host of phonological phenomena which co-occur with plural formation. Note that, contrary to
standard generative phonological practice, I do not subsume plural formation under the heading of phonology. Despite the complexity of Irish plural formation a few facts are quite clear. There is a rigid distinction between morphological features and phonological ones: /i:/ (or /i/) suffixation and palatalization / depalatalization are morphological phenomena, i.e. they indicate a change in grammatical category; all other factors are phonological; they do not indicate any change in grammatical level but are part of general processes which apply globally in the sound system of Irish and include epenthesis, syncope, dissimilation and establishment of preferred syllable structure. The object of this paper is to disentangle morphological and phonological phenomena and to describe both in an unambiguous and generally valid manner.

SETTING

In many respects Irish resembles German in plural formation. Groups of nouns in both languages are in a stage of transition from one to another (Wurzel 1983). But there are also significant differences between the two languages. In both there is a tendency to shift from the inflection to suffixal inflection for the plural. In German there are various loan-plurals (e.g. -en for Box : Boxen ‘loudspeaker(s)’; -s for Fan : Fans ‘fan(s)’), while in Irish loan plurals are simple, but the newer native plurals are quite complicated and depend on the syllabic and phonological structure of the base. The most basic similarity between Irish and German is that the plurals of foreign words offer evidence for the productivity of plural formation processes in the language as a whole. However, it is not the case that loans from English behave just like native words in Irish as they are not, contrary to normal practice, inflected for the genitive. The only exceptions to this are words which consist of a monosyllabic base and a stem-extending suffix in /<l/ which forms the genitive in its normal fashion by a change to /<a:/ (de Bhaldraithe 1953b: 21).

A further effect of the foreign origin of words is that their number may be misinterpreted in either of two ways (de Bhaldraithe, loc.cit.):

(1) a. singular treated as plural:
   na lettuce /na lʲetəs/ ‘lettuce’

b. double marking of plural:
   currants-i /kʰərntʲi/ ‘currants’

These two phenomena should mutually exclude each other. After all, if a loan-word with final /s/ is treated as a plural by the use of the plural form of the article (na) then double marking such as that in (1)b should not arise, as the plural should be recognized. But in fact the loan-plural in /s/ has an uncertain foothold in Irish. It is attested for a few forms (de Bhaldraithe 1953b, 23), particularly those which have a final /i:/ or /r/ in the singular, but there also exist alternative plurals with the appropriate productive suffix of Irish.

(2) a. turkey /tʰərki:/ ~ /tʰərki:s/

b. lorry /laxiː/ ~ /laxiːs/

As plurals in Irish usually involve a final vowel (with or without a stem-ending infix, see below) or palatalization of the stem final consonant (depalatalization, which is
also found, being the reverse of this) then the /s/ of English lacks the necessary phonetic similarity to either of these possibilities which would enable it to be naturally recognized as a plural maker.

In any treatment of Irish noun morphology one must start with monosyllabic stems. The vast majority of Irish nouns are monosyllabic. Those that are not are either compounds or have stem-extending suffixes or are syncopating or epenthetic nouns. All four types are represented in (3).

(3) a. dún /duːn/ ‘castle’
    b. bealach /bəlæx/ ‘way’
    c. focal /fəkəl/ ‘word’
    d. leamh /ləməv/ ‘child’

(3)a is a straightforward monosyllabic stem. (3)b has a stem-extending suffix /əx/. This type of noun always has suffix substitution in the plural:

(4) bealaí /bələi:/ ‘ways’ (/əx/ → /iː/)

(3)c is a syncopating noun (Stenson 1979, 525f.; Wigger 1973, 69f.), by which is meant that the vowel of the second syllable is lost on suffixation as in a derivational process such as

(5) focal + óir → fóclosir /fəkləsəi:/ ‘dictionary’

(3)d is an epenthetic noun; it is very similar to the syncopating type (see Hickey 1984 and 1985a on the interrelationship between epenthesis and syncope). The essential difference, however, is that the epenthetic vowel is never lost (and is thus not dedicated orthographically). Both epenthesis and syncope are phenomena which are governed by syllable structure. In each case the consonants which flank the second vowel cannot occur in a tautosyllabic cluster, hence the presence of the second vowel to distribute the elements of the underlying cluster syllabically.

(6) a. underlying /fəkl/ → /fəsəkl/
    b. underlying /lənəv/ → /lənəv/

The plural formation with these noun types will be dealt with later.

**Plural formation types: an outline**

The simplest type of plural in Irish is palatalization of the final consonant of a monosyllabic stem (Stenson 1979, 498ff; de Bhaldraithe 1953a, 17f.). Depalatalization is also possible with those forms with a palatal final consonant in the base form (that of the nominative case) but is nearly always accompanied by suffixation.

(7) a. düin /duːn/ ‘castles’
    b. fuinneog /fənəg/ ‘window’
    c. fuinneogai /fənəgiː/ ‘windows’
d. athair  /ar¹/      ‘father’
e. athar  /ar/       ‘fathers’

For suffixed forms the depalatalization is not in fact a part of the indication of the plural but a necessity imposed on the stem by the plural marker /iː/ in this case. On this see below.3

The next most basic type of plural information is the addition of a suffix /ə/ or /i/. These two vowels are predictable from the environment they occur in. The former is only found after non-palatal, the latter only after palatal consonants.

(8)  a. saolta  [si:ltə]  ‘lives’
    b. súile  [suːl]  ‘eyes’

Because of the predictability of these vowels I subsume them under a cover symbol /i/ which is appropriately realized as a non-palatal or palatal vowel ([ə]) or ([i]) in the necessary environment.

Both of these plural formation types can be found in one word.4 In syncopating nouns especially there is a tendency to have the two. The plural form doirse of singular doras can be derived by the application of both formation processes.

(9)  doras underlying  /dərs/
    /dər¹ʃi/   (i)  by palatalization
    /dəɾʃi/    (ii)  by vowel gradation
    /dəɾʃi/    (iii)  by /i/ suffixation
    /dairʃi/   (iv)  by mid-vowel diphthongization
    (v)  desyncope inapplicable

Two of the processes involved here are of no concern to us, vowel gradation which shifts a mid-back vowel to a mid-front vowel on palatalization of the following consonant and mid-vowel diphthongization which changes /e/ to /ai/. Note that desyncope, which would apply to /dərs/ to give /dəɾʃs/, applies vacuously to the plural as this has the syllabification /dairʃsʃi/ and so does not meet the structural description for desyncope.

Phonological processes and plural formation

In order to recognize the underlying simplicity of many plural formations a number of additional processes must be specified in the derivation of certain plurals. Consider the forms in (10)

(10)  a. tir  /tʰi:r¹/      ‘country’
b. tiortha  /tʰiːrʰi/   ‘countries’
c. saol  /si:l/      ‘life’
d. saolta  /siːlːi/   ‘lives’
e. gleann  /glªːn/  ‘glen’
f. gleannta  /glªːntːi/  ‘glens’
All these nouns have /i/ suffixation, but because of their final consonants they have an additional process as well which in each case is not confirmed to plural morphology.

Firstly, syllable-final /r/ (non-palatal /r/, see Stenson 1979,522; Wigger 1973,68) when followed by /i/ induces an epenthetic /h/ between it and the vowel. This is attested by various forms of metathesis in Irish, as in (11).

(11) a. *fiafraigh /fiəʃri/  →  /fiər$h/ ‘ask’

Here /r/ and /i/ metathesize but /i/ is reduced to /h/ to render the preferred phonological structure /-r$h/.

Secondly, one has an epenthetic stop in the latter four forms in (10). In Irish there is and has been (Hickey, 1985c) a process of fortifying voiced stops after sonorants (a type of voice dissimilation). Moreover, an epenthetic /-r/ tends to appear after a sonorant where no stop existed originally. Both these processes can be illustrated neatly by the metathesis found in (11) and its consequences (see de Bhaldraithe 1945,37).

(11) b. *malairt underlying /maiɭɾid$j/  
   /maɭɾ$ɾ$i/  (i) by post-sonorant fortition  
   (=input for metathesis)
   /maɭɾ$ɾ$i/  (i) by metathesis
   /maɭɾ$ɾ$i/  (ii) by defortition
   /maɭɾ$ɾ$i/  (iii) by post-sonorant,  
   pre-/ɾ/ epenthesis of /ɾ/  

   surface phonetic: [maːlɾɾɪdʃ]

A further case of epenthetic /ɾ/ is found with vowel-final monosyllabic stems. This is hiatus /ɾi/ as I chose to term it.

(12) a. *rî /ɾiːi:/  ‘king’
   b. *rithe /ɾiːtʃiː:/  ‘kings’

The productivity of this /ɾi/ can be shown by its occurrence with recent loans as in (13).

(13) a. *show /ʃoː$/  ~  /ʃoːɾiː:/  ‘shows’
   b. *row /ɾoː$/  ~  /ɾoːɾiː:/  ‘rows’

Hiatus /ɾi/ is always palatal, but in many cases the palatal or non-palatal nature of the consonant is irrelevant, being determined by natural assimilation of the previous segment (note that this is not the case in (13)). In order to collapse the difference between palatal and non-palatal consonants I will use capital italic letters to denote both palatal and non-palatal versions of segment. Thus T= /ɾi/ and /ɾi/; N = /n/ and /n/.

T epenthesis is found in one other case in Irish. After a final S there is a tendency for T to appear as in (14).
(14)  *aris  /əˈriːsɪ/  ‘again’

What this has in common with post-sonorant and hiatus T is that it occurs after a segment which is [+continuant]. It is also attested in some plural formations, e.g.:

(15)  a.  *rás  /rɑːs/  ‘race’
    b.  *rástaí  /rɑːstiː/  ‘races’
    c.  *sliabh  /sliːvɛ/  ‘mountain’
    d.  *sléibhte  /sliːvɛtʃiː/  ‘mountains’

There is a generalization which can be extracted from these forms and those with sonorants. In each case the stem-final consonant is homorganic with, or further forward in the mouth than, the epenthetic T. As there are no instances of this T after velars one can formulize this as follows.

(16)  T epenthesis can only occur after segments which are homorganic with or interior to it in their articulation.

Epenthetic T occurs after sonorants in plural formation in two further cases; the first is where the stem ends in N (as in (10f) but the suffix is not /i/.

(16)  a.  *traein  /treːn/  ‘train’
    b.  *traentachá  /treːntʃaxiː/  ‘trains’
    c.  *draein  /dreːn/  ‘drain’
    d.  *draentachá  /dreːntʃaxiː/  ‘drains’

The second is where the stem-extending infix itself has an epenthetic T when it includes an N.

(17)  a.  *garraí  /ɡaːriː/  ‘field, garden’
    b.  *garrantachá  /ɡaːrantʃaxiː/  ‘fields, gardens’

Distinguishing phonological and morphological features

When presenting an analysis of plurals in Irish one must distinguish processes which are phonological from those which are morphological. The area of Irish being treated here in fact offers clearest evidence of the validity of such a distinction. Consider the case of T epenthesis. This is a purely phonological phenomenon. It has its origin in what one can call the preferred phonological structure of words. Because there are already a large number of inherited forms with post-nasal and post-lateral stops, and because these have been devoiced, new instances (cf. the loan words in (16)) have a tendency to develop epenthetic T post-nasally as well. The T in these forms does not serve the function of indicating a grammatical category but has arisen by phonological analogy with other words which already have this T.

Other processes are not based on analogy but nonetheless have a phonological basis and can successfully account for a variety of fairly irregular plurals. One of these looks like a type of infixation. Consider the forms in (18).
(18)  a. anam /anəm/ ‘soul’  
b. anamnacháil /anəmnəxəil/ ‘souls’ 
c. clais /kləs/ ‘drain’ 
d. clásgannaí /kləskənəi/ ‘drains’

What is involved here is not so much infixation of /n/ in (18)b and /k/ in (18)d as a kind of duplication. With some nouns which have a plural in /əniː/ ~ /əxiː/ the plural morpheme obtains a consonantal onset which is a duplication of the onset of the previous syllable in the stem. In (18)c the previous syllable is also the only one, in (18)a the only consonantal syllable onset is that of the second syllable. The correctness of this synchronic analysis is borne out by disyllabic forms which have consonantal onsets for both syllables. Here the second is duplicated. Nor does there seem to be a restriction on the types of consonants which can be duplicated.

(19)  a. carraig /kərəi/ ‘rock’  
b. carraigreacháil /kərəiɾəxiː/ ‘rocks’

The R which arises in (19)b by onset duplication should not be confused with an epenthetic R which is also found in Irish plurals. (cf. Ó Siadhail 1980,232, where this distinction is not made, all instances being regarded as infixation).

(20)  a. aill /əil/ ‘cliff’  
b. ailltreachaí /əiltrəxiː/ ‘cliffs’ 
c. slinn /slən/ ‘slate’ 
d. slinntreachaí /sləntərxəiː/ ‘slates’

These words are cases of double epenthesis. In a derivation of the surface forms one place the in a certain order, but in fact both instances of epenthesis are mutually dependent. Both T and R epenthesis occur in (20). The T epenthesis is due to the suffixation of a sonorant-final stem (cf. (10)c-f above. The R which follows the T in (20) b and d is not part of the plural suffix, and therefore the origin of its occurrence must be sought in an analogical phonological phenomenon. Consider first the following forms.

(21)  a. banrán /bantrən/ ‘complaining’  
b. banríon /bantriən/ ‘queen’ 
c. lonradh /ləntrə/ ‘brightness’ 
d. malrach /maltrəx/ ‘youngster’

There is a rule of T epenthesis in Modern Irish whereby T is introduced at the onset of an unstressed syllable after a nasal and before /r/. This can be interpreted as fortition of the syllable onset, as otherwise it would be weaker (in terms of consonantal strength) than the coda of the preceding syllable.

(22) /_ {l,n}Sr _/ → /_ {l,n}Sr _/
The change in (22) thus represents an optimization of syllable structure. Now returning to (20) one sees that the surface forms are like those in (21). If one assumes $T$ epenthesis to have occurred before $R$ epenthesis (as the former is widely attested without the latter), then one can hardly appeal to the principle of syllable onset fortition which applies to $T$ epenthesis in (20). But one can say that the forms in (20) many have been influenced by the widespread occurrence of /tr/ clusters in post-sonorant position, as in (21). It is the coincidence of the two factors of $T$ epenthesis before syllable onset /r/ that gives the cluster onset TR for the plural formative in (20).

PLURAL FORMATION TYPES: DETAILS

The phenomena just discussed are of a phonological nature. They are to be kept strictly apart from morphological features, the latter serving the function of indicating a grammatical category. For this Irish has two means, with a further development of the second.

(23) Plural markers in Irish:

(i) palatalization of stem-final consonants
(ii) /i:/ suffixation
(iii) /i:/ suffixation

All the cases considered so far can be analyzed as instancing one of these two types. There are a few remnants of other declensional types which survive as plural markers with a handful of nouns such as /-n'/.

(24) a. lacha /lax/ ‘duck’
    b. lachain / laxin/ ‘ducks’

One of these types /iːl/ is found with one or two loan-words or recent formations (de Bhaldrathie 1953a, 50f.; 1953c,153):

(25) a. bulc /bʌlk/ ~ /bʌlk:/: ‘crowd(s)’
    b. plump /plʌmp/ ~ /plʌmp/: ‘bang(s)’

Palatalization

The above types can for all intents and purposes be neglected. Palatalization in Irish is a denaturalized phonological process. It has become the indicator of a morphological category. In accordance with its morphological function the value which a word-final consonant has for the feature [palatal] cannot be changed unless as part of a derivational or inflectional process. Nowhere is this clearer than with the metathesis in Irish. Here consonantal segments change their position in a word (or rather as a syllable). Although segments change their position, the value for [palatal] remains bound to a certain position as a change with this would imply a change in grammatical category, something which is impossible with metathesis given its purely phonological nature.

(26) foláir /fɔl:əːr/ → foráil /fɔr:əːl/ ‘necessary’
Thus part of the morphological component of Irish is the specification of the feature [palatal] with the final consonants of monosyllabic stems.

Palatalization of final consonants in loan-words is found occasionally, almost entirely in words ending in R (de Bhaldraithe 1953, 23). All word which have palatalization as a plural marker also have alternative plurals, for example:

(27) a. drawer /dra:r/ → /dra:r^1/ ‘drawers’
   /dra:rs/

b. bowl /baul/ → /baul^1/ ‘bowls’
   /baul^1ni:

/i:/ /i:/ suffixation

The second type of plural given in (23) is that which is most productive. The simplest case is that of /i/ addition to a monosyllabic stem.

(28) a. peann /p^3ːaːn/ ‘pen’
  b. peanna /p^3ːaːni/ ‘pens’
  c. scian /s^3ːk^1iːn/ ‘knife’
  d. sceana /s^3ːk^1ani/ ‘knives’
  e. coinneall /k^3ːn^1il/ ‘candle’
  f. coinnle /k^3ːn^1iːn/ ‘candles’

The realization of /i/ is automatically determined by the preceding consonant. Here the final short vowel is the morphological device for indicating the plural. In all the forms there are further purely phonological changes vis-à-vis the nominative singular; (28)e and f additionally show syncope with assimilatory palatalization of the /l/ on clustering with /n^3:/.

The unstressed neutral vowel /i/ has been lengthened and decentralized to /i:/ in spoken Irish so that the latter vowel has come to represent the second morphological device for indicating the plural (cf. (23) (iia) above). The /i:/ was originally one of the several plural suffix types which was substituted for a suffix in the nominative singular form. This position is still found with a number of native words.

(29) a. éadach /eːdax/ ‘item of clothing’
  b. éadaí /eːdiː/ ‘clothes’
  c. maide /mad^1iː/ ‘stick’
  d. maidi /mad^1iː/ ‘sticks’

As the phonetic difference between the realizations of /i:/ after palatal and non-palatal consonants is not as great as between those of /i/ ([ə] and [i]) in the corresponding environments, I use /i:/ as the symbol for both [i] after non-palatals) and [iː] (after palatals).

Apart from palatalization /i:1^3/ and /s/ the only plural marker found with loan-
words in Irish is /i:/ . It is the only productive marker, as practically the only source for the new nouns in Irish is formed by English loan-words. But its use in recent loans was preceded by an expansion of /i:/ suffixation with native words. In present-day spoken Irish there is a strong tendency to replace all instance of /i/ by /i:/ (Stenson (1979, 535) remarks on the demise of /æ/ (= my /i/) in favour of /i:/).

(30) a. bás /baːs/ ‘death’
    b. básanna /baːsənə/ ‘deaths’
    c. básannai /baːsənəi/ ‘deaths’

The second of the above forms is that prescribed by the official standard (Government of Ireland 1958,9), but /i/ is regularly replaced by /i:/ in the vernacular, which is uninfluenced by the prescriptivism of the official norm.

The view that the /i:/ plural with English loans is an analogical formation based on the expansion of /i:/ as a marker with native words is supported by the operation of analogy in other areas of loan-word morphology. For example, there is a declensional type in Irish (traditionally termed the second class, cf. Christian Brothers 1960, 67ff.) which involves monosyllabic nouns which end in a palatal consonant in the nominative singular. These form the genitive by /i/ suffixation. English loan-words which contain a front vowel (including English /æ/) have their final consonant palatalized in Irish and are then treated as belonging to this class.

(31) a. whip [fɪp] ‘whip-NOMINATIVE’
    b. [fɪpɪ] ‘whip-GENITIVE’
    c. bank [bæŋk] ‘bank-NOMINATIVE’
    d. [bæŋkɪ] ‘bank-GENITIVE’

Some nouns with a final palatal consonant are treated according to a further declensional type (with depalatalization and /æx/ suffixation in the genitive) or both declensional types are found (de Bhaldraithe 1953b, 22).

(32) a. traein /treːn/ ‘train- NOMINATIVE’
    b. /treːnæx/ ‘train- GENITIVE’
    c. scheme /ʃkɪm/ ‘scheme- NOMINATIVE’
    d. /ʃkɪmæx/ ‘scheme- GENITIVE’
    e. /ʃkɪmɪx/ ‘scheme-GENITIVE’

The alternation of loan-words applies not just to their ascription to a particular declensional type but also to the base form, the nominative singular. With the forms in (33) the English loan-word has an additional final /i/ in the nominative singular with /i:/ substitution in the plural.

(33) a. turnip /tərnɪp/ ‘turnip’
    b. turnips /tərnɪpɪ/ ‘turnips’
    c. jobber /dʒæbrɪ/ ‘jobber’
    d. jobbers /dʒæbrɪ/ ‘jobbers’
The latter two forms conform to a pattern well established since late Middle Irish whereby English agent nouns have /i/ suffixation in the singular and /i:/ and /i:/ in the plural.

(34) a. búistéara /bu:sˈtʃəɾə/ ‘butcher’
    b. búistéaraí /bu:sˈtʃəɾəj/ ‘butchers’

That this is an older loan is seen from the lengthening of the vowel in the second syllable and the medial affricate metathesis. These earlier loans and some later ones have an addition of phonetic substance to the original English word. This applies not just to agent nouns as in (34) and (33)c and d, but to many other nouns as well, these providing the base for the analogical suffixation of the nominative singular form in (33)a.

(35) a. page → pāiste /pəˈstəːʲ/  
    b. box → bosca /ˈbɒska/  

Origin of /i/ suffixation

The origin of /i/ suffixation lies in a process in the history of Irish whereby the genitive form came to be used as a nominative with the progressive decay of Old Irish declensional system (MacEoin 1974). What is interesting for the matter in hand is that not only did native words become extended by /i/, but /i/ (was added to loans such as those in 835), rendering them disyllabic (MacEoin 1974, 63). MacEoin’s contention is that the reason for the extra syllable was the existence of final unstressed syllables in ‘Norman French or English’ (i.e. from the late 12th century onwards) in words which subsequently lost these syllables. This is a dubious explanation, as the dating of the loss of final schwa in such English words as page /paːʤ(ə)/ is uncertain, and it may equally well have been the case that this and other words were monosyllabic at the time of borrowing into Irish.

One could equally account for the disyllabification of English loan-words by postulating a preferred disyllabic structure for the base forms of nouns in Irish. With the increasing dominance of English and then attendant reduction of Irish to the status of a substratum via-à-vis English, the imperatives of phonological structure of nouns would have relaxed (thus explaining those loan words which optionally have /i/ suffixation; MacEoin 1974, 64) giving eventually the position which obtains today that the syllabic structure of loan-words is not usually altered in their base forms.

The arguments in favour of a ‘preferred phonological structure’ gain in force when one considers productive plural information in Modern Irish. What is of interest here is not the use of /i:/ as a marker but the attendant alterations in phonological structure which coincide with /i:/ suffixation.

First of all a brief historical excurses. The accusative plural of a certain declensional class in Old Irish (Class 8 in Thurneysen 1946, 202f.) had a lenited velar and /i/ (Lazar-Meyn 1982, 196) with /t/-stem nouns. The accusative plural was then adopted for the nominative plural, and in Middle Irish various nouns (including the nouns of relationship in /t/) adopted this plural and the new declensional type quickly expanded.
(36) a. original: *cathair ~ cathracha* ‘town(s)’
b. by analogy: *máthair ~ máthracha* ‘mother(s)’
c. by analogy: *altóir ~ altóracha* ‘alter(s)’

From Early Modern Irish to Modern Irish the -acha plural gained ground rapidly from its original distribution as the plural marker for /r/-stems to those in V+ sonorant in general (see Strachan 1905; Lazar-Meyn 1982). With the later development of /i/ to /iː/, -acha becomes /axːiː/. A similar development is recorded for the suffix -anna which is now /əniː/. This derives from nasal stems (Thurneysen 1946, 209ff) which had an inflectional suffix with a final or medial /n/. As with the velar stems, the accusative plural shows an ending in -ana which is closest to Modern Irish form /ənɪː/ from /ən/. 9

The later productive uses of /axːiː/ and /ənɪː/ do not involve any changes of the stem. But with those native nouns which originally had /axːiː/, or rather /axː/, there maybe alteration.

(37) a. *ubh* /əv/ ‘egg’
b. *uibheacha* /iːvəxːiː/ ‘eggs’
c. *láir* /λːɾiː/ ‘mare’
d. *lárácha* /λːɾəxːiː/ ‘mares’

With these forms the plural has as its input the truncated stem of the genitive.

(38) a. *ubh* /əv/ ‘egg-NOMINATIVE’
    *uibhe* /iːvəiː/ ‘egg-GENITIVE’
    /iːvəiː/ (i) by /iː/ deletion
    (= input for plural formation)

b. *láir* /λːɾiː/ ‘mare-NOMINATIVE’
    *lárách* /λːɾəxːiː/ ‘mare-GENITIVE’
    /λːɾəxːiː/ (i) by /axː/ deletion
    (=input for plural formation)

In both these cases the value for the feature [palatal] has been reversed from the nominative to the genitive; the value which the latter has it retained for the plural, showing how the (truncated) genitive serves as input for the plural. With productive plural formation, however, /axːiː/ and /ənɪː/ do not involve any change in the stem-final consonant.

**Synchronic analysis of /iː/ suffixation**

Alteration of the stem-final consonant in the plural is found with the native words not only through the use of the genitive as input for the plural. Consider the forms in (39).

(39) a. *fuinneoig* /finːəlogːiː/ ‘window-NOMINATIVE’
b. fuinneoge /fɪnˈoːɡə/ ‘window-GENITIVE’
c. fuinneogai /fɪnˈoːɡai/ ‘windows’

Such cases are original /iː/ plurals. The change from /g'/ to /g/ between singular and plural cannot be accounted for via the genitive. Nor can it, importantly, be traced to an automatic assimilation to the suffixed vowel as this is front and high and would, if anything, help to maintain the palatal consonant.

Natural and explicit palatalization

Here it is appropriate to introduce a distinction which is needed in Irish morphology (in derivational word formation; see Hickey, 1985c). On suffixation a final consonant may change its value for the feature [palatal]. If the change is in agreement with the value which the following vowel has for [front] (or [back]), then one speaks of a natural palatalization rule.

\[
C \rightarrow C [\alpha\text{pal}] /\text{___}_V [\alpha\text{front}]
\]

This rule may apply vacuously (e.g. to a velar consonant before a back vowel or a palatal consonant before a front one) or may change the value which the segment has in the input to the rule (palatal consonant becoming a velar before a back vowel, a velar becoming front before a front vowel).

The reverse of this is an explicit palatalization rule. For instance the change included in the stem-final consonant in (39) above is due to the operation of an explicit palatalization rule as /iː/ suffixation causes depalatalization of the preceding palatal consonant. It would have applied vacuously if the consonant was already non-palatal.

Such a rule must be lexically stored as part of the suffixation process and is not needed only in original /iː/ plural formation with native words but in other areas of Irish morphology as well.

Suffixes, infixes and preferred phonological structure

In treatment of the plural in Modern Irish it is normal (Stenson 1979, 496f.; de Bhaldraithe 1953a, 42ff) to talk of /œː/ and /ɔːiː/ as endings (i.e. suffixes). But there are cogent reasons for regarding /iː/ as the sole plural marker and /œː/ and /ɔːiː/ as infixes. To substantiate this, consider the following three forms.

(41)  a. clann /klɑː:n/ ‘family’
      b. clanna /klɑː:nə/ ‘families’
      c. clannanai /klɑː:nəi/ ‘families’

(41)b has the plural of the official standard, (41)c that of spoken Irish (de Bhaldraithe 1953a, 42). Now the vast majority of monosyllabic loan-words also have the /ɔːiː/ of (41)c in the plural (de Bhaldraithe 1953a, 42f.)

(42)  a. jobs /dʒəbəniː/
b. **blouses** /blausəni:/
c. **stuffs** /stʌfəni:/
d. **votes** /voːtəni:/

As de Bhaldraithe rightly remarks (loc. cit.), /əni:/ is only found after monosyllables. But should one not have simple /iː/ suffixation with the words in (42)? If one assumes that loan-words use the productive marker (here /iː/) and minimal means for plural formation, then the forms in (42) have a redundant internal sequence /ən/.

The answer would seem to be that just as Irish had for the late Middle and Early Modern Irish a preferred disyllabic phonological structure for the base forms of nouns, it now has a preferred trisyllabic phonological structure of plurals. This would explain the former (and today the prescribed) plural in (41)b and the spoken Irish plural of the day in (41)c. The derivation of the latter would then be as follows.

\[(43)\quad \text{clann} /\text{klaːn}/\]
\[ /\text{klaːni}/ (i) \text{ by /iː/ suffixation} \]
\[ /\text{klaːni}/ (ii) \text{ by /iː/ substitution} \]
\[ /\text{klaːnəni}/ (iii) \text{ by syllable infixation} \]

Additional evidence for the correctness of this analysis of the trisyllabic plurals is offered by several words which only have /iː/ suffixation when the input to the plural is disyllabic to begin with.

\[(44)\quad \text{Éireannach} /\text{eːɾənax}/ \quad \text{‘Irishman’} \]
\[ /\text{eːɾən}/ (i) \text{ by stem suffix deletion} \]
\[ /\text{eːɾənəni}/ (ii) \text{ by /iː/ suffixation} \]

Stenson (1979) unfortunately misses this point. She explicitly denies that syllable structure plays a role in plural formation (1979, 518). For example, when dealing with nouns with an /əx/ in the base she gives a list of eighteen words which have a plural with /əx/ + /iː/ and disyllabic with /iː/ alone. Now in view of the fact that the plural in /iː/ alone is diachronically original, an explanation is in order for the new plural formatives which add /iː/ to /əx/ rather than replacing it. The obvious reason is to reach the preferred trisyllabic phonological structure.

The third step in (43) above has been termed, rather generally, syllable infixation. The reason for this is that /ən/ is only one of a series of infixes. The second main infix is that whose historical development has been sketched above (de Bhaldraithe 1953b, 22).

\[(45)\quad \text{turns} /\text{tɜːnəxi}/\]

If the sole purpose of this infixation is to render a disyllabic form trisyllabic then should not be any difference between /əx/ and /ən/ as infixes. It is true that both have been disconnected from their traditional affiliation to a declensional type, but it is difficult to say whether they have attained a new and mutually exclusive distribution.
With /ɔxi:/ there would seem to be a certain conditioning of its occurrence such that it is
found only after polysyllables or monosyllables which end in either a lateral or, more
frequently, a nasal (this largely applies to loan-words; see de Bhaldraíthe 1953, 23).
This would result in /ɔx/ in all polysyllables and monosyllables where /ɔx/ would
occur due to a sonorant dissimilation rule (i.e. /ɔx/ instead of /ɔn/ as an infix), giving
the following.

(46)  a. abhainn /aun]/ ‘river’
     b. aibhneachaí /aiv1nɔxi:/ ‘rivers’
     c. éan /e:n/ ‘bird’
     d. éanachaí /e:nɔxi:/ ‘birds’

Unfortunately, no such neat distribution is found. The /ɔn/ infix occurs with many
nasal-final monosyllables both with native and loan-words.

(47)  a. dán /da:n/ ‘poem’
     b. dánannaí /danaṇi:/ ‘poems’
     c. plan /p1an]/ ‘plan’
     d. planannaí /p1anɔni:/ ‘plans’

Neither can the occurrence of /ɔn/ or /ɔx/ be accounted for by some aspect of the
phonological structure of the stem such as a stem-final cluster as opposed to a single
consonant. But it would not be accurate to maintain that all plural infixes must be
lexically specified; this would imply that there is only one kind of plural possible with
each stem. A salient characteristic of plural formation in Irish is the variation in
syllable number, that is, newer plurals compete with older ones as the former result in
the preferred number of syllables.

(48)  a. póg /po:g/ ‘kiss’
     b. póga /po:gi/ ‘kisses’
     c. pógannai /pɔgani:/ ‘kisses’
     d. gaoth /gi:/ ‘wind’
     e. gaotha /gi:i/ ‘winds’ 10
     f. gaothannai /gi:ni:/ ‘winds’

The above remarks have all referred to plurals whose stems are monosyllabic.
Where these are disyllabic the infix /ɔx/ is always found. This is seen clearly with
loan-words (de Bhaldraíthe 1953b, 22).

(49)  a. action /ak’sɔn/  
     /ak’sɔnxɔxi:/
     b. teapot /te:pat/  
     /te:pataξi:/

No medial long vowels (see below, (51)) are found with these four-syllable plurals.
This is not, however, conditioned by their being over three syllables, as the long
medial vowels are confined to native words. These are coincidentally trisyllabic as plurals.

**Stress and plural formation**

Although (Connemara) Irish has rigid initial stress those English loan-words which have non-initial stress are frequently borrowed with the donor language stress pattern. When this is the case the /ənːi:/ plural is allowed alongside /ɔxiː:, which is used for polysyllables. This is the clearest indication of the distribution of /ənːi:/ and /ɔxiː: according to the number of syllables in the nominative singular stem.

(50) a.

<table>
<thead>
<tr>
<th>Noun</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>machine</td>
<td>/məˈsɪːn/</td>
</tr>
<tr>
<td></td>
<td>/məˈsɪːnːi:/ (~ /məˈsɪːnːiː/)</td>
</tr>
<tr>
<td></td>
<td>/məˈsɪːnəxiː:/</td>
</tr>
</tbody>
</table>

b.

<table>
<thead>
<tr>
<th>Noun</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>degree</td>
<td>/dəˈɡɹiːniː:/ (~ /dəˈɡɹiːniː/)</td>
</tr>
<tr>
<td></td>
<td>/dəˈɡɹiːxiː/</td>
</tr>
</tbody>
</table>

**Infixed vowel variation**

The allomorphy of the plural is not exhausted by this reference to the possibility of /x/ or /n/ occurring as an infix. With both of these segments a vowel precedes. While this has been a schwa in all the cases looked at so far, this is by no means always the case. A long vowel is frequently found. 11 This can be a high or mid vowel, front or back.

(51) i: ————————— u:  
     e: ——————o:

These long four vowels only occur with the consonantal infix /x/. The mid vowels are decidedly less common (de Bhaldraithe 1953a, 47). Furthermore, the long vowels do not occur with loan-words although the /x/ infix does (de Bhaldraithe 1953b, 22f.). On the front-back axis it is the front high vowel which occurs more frequently than the back vowel.

All the nouns which have a long vowel before infixed /x/ form the plural by suffix substitution (with the exception of one or two, such as bonn "sole; bottom"); these nouns always have an alternative plural with a schwa before the infixed consonant.

(52) ola /əlq/ ‘oil’

<table>
<thead>
<tr>
<th>Noun</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>/əl/ (i) by suffix deletion</td>
</tr>
<tr>
<td></td>
<td>/əlɪː/ (ii) by suffix addition</td>
</tr>
<tr>
<td></td>
<td>/əlɪːxiː/ (iii) by /x/ suffixation</td>
</tr>
<tr>
<td></td>
<td>/əlɪːxiː/ (iv) by medial long vowel insertion</td>
</tr>
</tbody>
</table>

Stages (iii) and (iv) are only separated to show that the long vowel could be different (i.e. /uː/ is also possible with the plural of /ələ/ : /əluːxiː/). But in fact the entire syllable /iːx/ or /uːx/ is infixed to render the plural trisyllabic. A four stage derivation
has the technical advantage of blocking derivations such as /áníː/:/ which are not possible as surface forms.

(53) 

| /áníː:/ | (iii) by /n/ infixation |
| -----   | (iv) medial long vowel insertion applicable |
| /ánáníː:/ | (v) by medial schwa insertion |

The occurrence of long vowels before infixed /x/ is, like that of /x/ and /n/ themselves, not bound to nouns of any particular former declensional class. Even more than with the consonantal infixes the long vowels are not determined by a characteristic of the stem. Only if the stem has an extending suffix, such as /aːl/, found with certain loan-words, is the occurrence of a long vowel before /x/ impermissible.

(54) a. stuff-áil /staːfːaːl/ ‘stuff’
    b. stuff-álacháí /staːfːaːlaxːːi:/ ‘stuffs’
    c. */staːfːaːlxiː:/

Here the suffix is determined by the stem, which may be a native word or a loan form with a native suffix added, something which is irrelevant for the vowel before the infix /x/. Note also the explicitly depalatalized stem-final /l/ on plural formation. As with the forms in (38) above, this is due to the plural having a truncated genitive as its input.

(55) 

| /staːfːaːl/ | → | /staːfːaːl/ (genitive) |
| /staːfːaːl/ | (i) by inflectional suffix deletion |
|             | (= input to plural formation) |

With those nouns, however, which have a long vowel before infixed /x/ the freely varying nature of this vowel is clear from the fact that these nouns have several if not all vowels attested in their various plural forms. As an illustration of this the noun teanga, which has every possible productive plural formation attested, can be given in conclusion.

(56) teanga /tʰaŋɡa:/
      /tʰaŋɡɔːni:/
      /tʰaŋɡɔːniː:/
      /tʰaŋɡɔːxiː:/
      /tʰaŋgiːxiː:/
      /tʰaŋgeːxiː:/
      /tʰaŋɡoːxiː:/
      /tʰaŋɡuːxiː:/
FOOTNOTES

1 The dialect which the forms quoted below represent is that of Cois Fhairrge as described by de Bhaldraithe (1945; 1953a and b), for example. Apart from the literature citations I have included forms which stem from my own observations in the Connemara region (including the Aran Islands).

2 Because of dialectal evidence (Munster Irish has /g/ for -(a)igh (= Connemara Irish /i:/)) Stenson (1979, 499) analyses this plural formation as /x/ to /x/ to /i:/ to Ø with fortition of /y/ to /g/ in Munster.

3 It is essential to stress here that the changes in the stem vowel of monosyllabic bases is not part of the plural formation process. It is a phonetic phenomenon attendant on the alteration of the value for the feature [palatal] with stem-final consonants and is neither restricted to a certain grammatical category nor to a given lexical class. Thus I hold the section on this vowel change in Wigger (1973, 70f., where he calls it ‘umlaut’ ) and Stenson (1979, 500f., where she calls it ‘ablaut’) to be strictly speaking superfluous within the framework of their articles. The complex of vowel gradation (to use a less history-laden term than ablaut or umlaut) is treated in Hickey, 1985a and 1985c).

4 Neither Stenson (1979) nor Skerrett (1968) considers the possibility of explaining nouns like that in (9) (all syncopating) as having a plural from palatalization and /i/ suffixation, though Wigger (1970, 67, 107) comes quite close to this. His ‘Vokalauslaut’ (ibid., 60ff) corresponds to my /i/ suffixation. Other changes which attend /i/ suffixation such as /t/ epenthesis are simply noted rather than explained (ibid., 61).

5 The term ‘fortition’ is used here in the accepted sense of a pholological process which is the opposite of lenition. It thus characterizes the change of a fricative (or glide) to a stop, or of a voiced consonant to a voiceless one, e.g. English egg (with a stop from an earlier fricative via Scandinavian) versus German Ei (without a final stop as fortition did not occur in German). The term ‘fortition’ is roughly equivalent to the term ‘provection’ as used in discussion of the pholological process in Breton, whereby consonantal segments are strengthened , i.e. become less vowel like (Jackson 1967, 329ff).

6 This is a case of a pholological rule and there is no justification for treating it as a plural formational type as does Stenson (1979, 513ff.)

7 de Bhaldraithe (1945, 36) gives an epenthetic /d/ in this position but I am not convinced that it is a voiced stop here. As the voice distinction is neutralized in these cases anyway the matter is irrelevant.

8 de Bhaldraithe (1953b, 23) has /drà:ri:/ as well.

9 The guttural and nasal stems contaminated each other in Scottish Gaelic so that one has such plurals as cathair ~ cathraichean ‘chair’ which show both /x/ and /n/.

10 After a vowel (front or back) /i/ is realized as [a] so that gaotha =/g[alpha]:a/. The following form in (48) f has an offglide to the velar [n]: gaothannaí =/g[alpha]:an:/. 

11 de Bhaldraithe (1953a, 47f.) does not use a transcription /ixi:/ for a high front vowel before infixed /x/ but /ixi:. This is because sees the [a] before the /x/ as a part of the syllable vowel core, parallel with the diphthong /ia/ which exists in Irish anyway. But as
I have shown elsewhere (Hickey, 1985b) the phonetic sequence [iə] is not always a manifestation of the phonemic diphthong /iə/ as in bia /bìa/ but is, as here, a long high front vowel /iː/ which has an automatic offglide [ə] to the following velar /x/. This offglide is a purely phonetic phenomenon (and hence is not reflected in my phonemic transcription) which arises because Irish has no palatal allophone [ç] of velar /x/ after high front vowels as has, say, Standard German.

REFERENCES


---1953b: ‘Nua-Iasachtaí i nGaeilge Chois Fhairrge’, Êigse 7, 1-34


