Segmental phonology and word-formation

Agency and abstraction in the history of Irish

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Although Irish has a fairly complex set of inflections and a well-developed system of compounding, word-formation by means of derivational suffixation is not widespread within the language. In fact derivation in Irish confines itself to the formation of nouns of agency and nouns of abstraction. There are however many means of expressing agency and abstraction in Irish and the various possibilities for suffixation raise questions of basic concern in the segmental phonology of word formation such as the underlying form of suffixes, the lexical specification of certain adjustments to suffixed stems, the operation of phonological processes in the narrower area of word formation. It is the analysis of these questions which forms the content of this paper.

In the title I refer specifically to segmental phonology. This is deliberate as treatments of English word formation always involve the investigation of accental patterns which in Irish play no role in word formation at all. But there are phonological processes in Irish which English does not share with Irish in the area of word formation, or at least not in the same manner or to the same extent. Two of these processes, syncope and truncation, are of particular concern below.

1. Agency

In Old Irish nouns of agency could be formed with either a native or a loan suffix. The former had a variety of forms chiefly /-iə/ and /-iː/ (Thurneysen, 1946: 170ff.). Of these first two, on account of the vocalization of voiced fricatives in the subsequent development of Irish, partially coalesced to result in /iː/ as an agentive suffix in Modern Irish.

\[
\begin{array}{llll}
1 & \text{a} & \text{OI:} & \text{mucc} / \text{muk}/ \\
& \text{b} & \text{muccid} / \text{muk}:iə/ \\
& \text{c} & \text{gat} / \text{gad}/ \\
& \text{d} & \text{gataige} / \text{gadijə} /
\end{array}
\]

\[
\begin{array}{lll}
\text{ModI:} & \text{muc} & / \text{mək}/ \\
& \text{muic} & / \text{mək}iː/ \\
& \text{goid} & / \text{əd}/ \\
& \text{gadaí} & / \text{gadi}/
\end{array}
\]

In those cases where vocalized fricatives did not result in a long vowel they were reduced to a short centralized vowel /ə/. The third suffix mentioned above has remained fairly stable.¹

¹ The non-native suffix used for agency nouns has two forms in the donor language. The first is Latin –ārius which appears in Irish with two phonological shapes /-trə/ and /-oərə/ (Thurneysen, 1946: 170).
I have given instances with the second form of the suffix in Irish as only this is of interest here. The second form in Latin which was adopted into Irish was –(a)tor as in

\[(2)\] a. laitnóir /laitn’éôr/ Med. Lat. ‘latinarius’
  b. methel /m’êôl/ ‘band of reapers’
  c. metheleór /m’êôr/ ‘cutter’

Despite their different sources both these suffixes came to be identified as the same and the /t/ of the second while not lost in Irish became part of the Irish suffix and later appeared under specific phonological conditions determined by the stems to which it was added. In accordance with the phonology of Old Irish it was voiced in medial position. I will assume this to be the normal case and in future reference will quote the form of the suffix as /ďôr/ which is its longest form. A corollary of taking the longest form is that the other manifestations of it are arrived at by a process of segment deletion rather than insertion. I will also present arguments in favour of this procedure.

For Old Irish the suffix can be represented as /ďôr/ as it had already begun to be used productively (Thurneysen, 1946: 172), compare

\[(3)\] senatóir /sen’éôr/ Lat. ‘senator’

The derivation of the form in (4)b involves a process which represents a problem for the analysis of this and later agency nouns formed with the same suffix, namely truncation. The most general form of a truncation rule, when used as an instrument in word formation (Aronoff, 1976: 88) can be formulated as follows.

\[(5)\] \[
\begin{array}{c}
\text{root} + A
\end{array} + B
\]

\[1\] \[2\] \[3\]

\[\rightarrow\] \[1\] \[0\] \[3\]

where x and y are major lexical categories (Chomsky and Halle, 1968: 366). Applied to the forms in (4) the truncation rule realizes as

\[(6)\] \[
\begin{array}{c}
tuy/ + /tôr/ + /ďôr/ \rightarrow tuy/ + /ďôr/
\end{array}
\]

\[1\] \[2\] \[3\] \[1\] \[3\]

The truncated and suffixed form corresponds to the surface realization of (4)b.

Two difficulties arise with the suffixation of /ďôr/ in Old Irish. The first is that truncation does not always take place. As this is the case then the inclusion of the truncation rule in the general set of word formation rules for agency in Old Irish requires a sufficient and necessary definition of the structural description to be met for truncation to occur.

The second difficulty is that the suffix /ďôr/ does not, as intimated above, realize in its full form in all instances, it has two other alternative realizations. To derive these from the full suffix form /ďôr/ a set of suffix reduction rules is required. Lastly general phonological processes, which are not specific to word formation, apply if their
structural description is met. Their operation and their placing in a derivation has a
decisive effect on suffix realization as well.

To examine a concrete example in which all these factors come together take the set
of Old Irish forms in (7).

(7) a fochell ‘caring for’
    b foichleóir ‘curator’

The form in (7)a from which that in (7)b is derived, is unsyncopated. Syncope has played
and still plays an important role in the appearance of surface forms in Irish. Any base
form which can be inflected or suffixed is theoretically unsyncopated. But this
designation only has value as a characterization if syncope appears on inflection or
suffixation. Syncope in Irish is furthermore a purely phonological phenomenon which is
undergone by a potential input when its structural description is met, irrespective of what
function the input affected has in the grammar of the language. At its most general it has
the form

(8) $xVy$ $\rightarrow$ -x$y$- (V $\rightarrow$ $\emptyset$)

Condition: V is unstressed

According to (8) syncope is the loss of an unstressed vowel when two segments x and y
which are tautosyllabic become heterosyllabic. The process through which syncope has
been triggered is irrelevant for the latter’s operation. Furthermore not all cases of $xVy$
undergo syncope, the elements of such a syllable must be such that on the loss of the
vowel the resulting cluster represents a possible cluster in the phonotactics of Irish.

An essential difference between syncope and truncation is that the latter involves the
loss of consonants as well as vowels and occurs for word-formational reasons. The
former is determined by syllabification alone and occurs, or does not occur, when this
alters. The input to truncation is the application of a word-formational process, such as
agency suffixation. It might be assumed then that the input for syncope is a suffixed form.
According to this view, the derivation of (7)b would be

(9) a fochell + óir
    b fochellóir (i) by suffixation
    c *fochlóir (ii) by syncope

What results is not the correct surface output. The difficulty with the view that syncope
occurs after suffixation is that the palatalization of the central cluster in (7)b is not
present in the derivation. It must be assumed, in order to arrive at the correct output, that
syncope is already present in the underlying form. This then gives the alternative
derivation, for which I give a phonetic transcription

(10) base form: /f$\\underline{x}$l$\underline{i}$/ + /$o$r$\underline{i}$/
    /f$\\underline{x}$l$\underline{i}$or$\underline{i}$/ (i) by suffixation

The advantage of this procedure is that there is one step less in (10) than in (9) but the
surface base form now involves a derivation of its own.

(11) base form: /f$\underline{x}$l$\underline{i}$/
    /f$s$$\underline{x}$l$\underline{i}$/ (i) by syllabification and vowel insertion
What I am assuming here is that for the base form there is a process of syllabification which operates as the last stage of a derivation and which inserts an unstressed vowel between segments of a cluster if the latter is not permissible according to the phonotactics of the language. In fact this syllabification is a general process for the entire language; every derived form or base form must undergo syllabification before realization as a surface form.

This process of syncope has remained as described throughout the history of the language up to the present day. It is still triggered by the same considerations of syllabification. Consider the following Modern Irish forms.

(12) a  deacair /d3akr3/  ‘difficult’
    b  deacracht /d3akrxt/  ‘difficulty’
    c  saibhir /s3v3r3/  ‘rich’
    d  saibhreas /s3v3r3s/  ‘richness’
    e  uasal /uas3l/  ‘noble’
    f  uaisleacht /uas3lxt/  ‘nobility’

A glance at these forms however reveals a basic problem of assuming underlying syncope for those forms which have an additional vowel on resyllabification. It is this: working back from a surface syncopated form, how can one tell what a surface unsyncopated form will be like in terms of the value for the feature [palatal]\(^4\) for the segments of the cluster? Although /f3xl3/ has an entirely palatal cluster it appears unsyncopated on the surface as /xVl3/. If this were the only possibility one could specify that on de-syncope the first segment of a cluster is de-palatalized. But the forms in (12)c and d evidently contradict this as do those in (12)e and f. (12)a and b show that a velar syncopated cluster does not resolve as two velar segments either. The possibilities which exist and have existed are abstractly

(13) a  C\(^3\) C\(^3\)  →  C\(^3\) V C\(^3\)  (saibhir)
    b  C\(^3\) C\(^3\)  →  C V C\(^3\)  (fochell)
    c  C\(^3\) C\(^3\)  →  C V C  (uasal)
    d  C C  →  C V C  (deacair)

There is no phonological process, such as assimilation, progressive or regressive, which would account for the feature values of the resolved clusters in (13). Note that to postulate that the lexically stored forms are the unsyncopated ones and to have syncope introduced later, as was considered above, is not a viable solution either as one could not say what value for [palatal] the resulting syncopated clusters would have. For example C V C\(^3\) results in both C\(^3\) C\(^3\) (13)b and C C (13)d. As it stands one must accept that the syncopated forms are stored with additional information on how the clusters resolve.

It has been maintained that syncope applies before suffixation. The initial argumentation against the derivation in (9) was that if syncope applies after suffixation there is no way of telling what value for [palatal] the syncopated cluster will have. It might be countered now that my postulation that the lexically stored forms contain information on both the syncopated and the non-syncopated forms would render my objection to the derivation in (9) invalid. But further considerations show that the later standpoint which I have evolved is correct. These concern the form of the suffix used.
The assumed form of the agency suffix is /ədɔrːl/ (see (4) above). It would be expected then that the base form /ɛ:xl/ should have this suffix added as in (14).

(14) a /ɛ:xl/ + /ədɔrːl/  
    b */ɛ:xlədɔrːr/  (i) by suffixation

Now if one compares Modern Irish productive forms with /ədɔrːl/ one can arrive at a generalization which accounts for the unacceptability of (14)b. Consider

(15) a croch /ktrːx/ ‘gallows’  
    b crochadóir /ktrːxədɔrːl/ ‘hangman’  
    c glic /gɛl1ɛl/ ‘clever’  
    d gliceadhóir /gɛl1ɛlədɔrːl/ ‘trickster’  
    e dlí /dɛljːiː/ ‘law’  
    f dlidóir /dɛljːədɔrːl/ ‘lawyer’

The generalization to be drawn from (15)a-f is that the form /ədɔrːl/ is only added to stems which are (i) vocalic or (ii) end in a single segment. But if syncope applies after suffixation as suggested in (9) then (14)b should be the correct output as the non-syncopated /ɛ:xl/ of (9) ends in a single segment and so should accept the unreduced suffix /ədɔrːl/. As it patently does not, syncope must have occurred before suffixation.

One of the conditions for the process illustrated by (10), suffix reduction, is a stem-final cluster. This gives the most radical reduction. An intermediate type of reduction is seen in the form /tɔrːl/. To illustrate this and for the ensuing analysis I use Early Modern Irish forms. Consider the appearance of the intermediate suffix.

(16) a coill /kɪlːl/ ‘wood’  
    b coillteóir /kɪlːlətɔrːl/ ‘woodsman’

According to the remarks above the expected form would be

(17) */kɪlːlədɔrːl/

As there is a stem-final single segment. Now while this form is not attested similar forms are, along with those with the /tɔrːl/ suffix.

(18) a feann /fɑːn/ ‘to skin’  
    b feanntóir /fɑːntɔrːl/ ‘skinner’  
    c feannnadoir /fɑːnədɔrːl/ ‘skinner’

What in fact has occurred in (16)b and (18)b, which represent by far the most common forms, is syncope. If one recalls the formulation of syncope given in (8) then one sees that (18)c and (17) both match the structural description for it: an unstressed vowel is lost if the consonants which come together as a result of it represent a permissible phonotactic sequence. Here one must distinguish between tautosyllabic and heterosyllabic clusters. Thus while /ɛ:xl/ (in (10)) can only occur syllable initially and /nt/ only syllable finally
both can occur with a syllable boundary running through the cluster as for syncope. This accounts for the impossibility of (14)b as no syllabification would make the cluster acceptable in terms of Irish phonotactics.

(19) a */-x₁[l₁t₁]/
    b */-x₁[l₁t₁]/

It can be seen that on syncope /d/ changes to /t/. This is part of a general rule of the form

(20) Voice dissimilation rule
    \[ C \rightarrow [\alpha \text{voice}] / \begin{cases} + \text{son} \\ - \alpha \text{voice} \end{cases} \]

which in effect means devoicing as Irish has no phonemically voiceless sonorants. It can be seen to effect any input which meets its structural description and has operated throughout the whole history of Irish. In fact its form was somewhat more complicated in Old Irish. An extended version to account for the situation in Old Irish would be

(21) Voice and manner dissimilation rule
    \[ \begin{cases} + \text{voice} \\ + \text{continuant} \end{cases} \rightarrow \begin{cases} - \text{voice} \\ - \text{continuant} \end{cases} / [+\text{son}] \]

(21) now accounts for the following set of forms.

(22) a fáilid /f₁ɑːl₁d₁/ ‘joyous’ (fáili ‘affable’ (ModI))
    b fáilte /f₁ɑːl₁t₁/ ‘welcome’ (fáilte ‘welcome’ (ModI))
    c fáilteach /f₁ɑːl₁t₁ʃ/ ‘joyous’ (fáilteach ‘welcoming’ (ModI))

That the form in (18)b is really a case of syncope can be seen from (22) b and its derivation.

(23) fáilid /f₁ɑːl₁d₁/
    /f₁ɑːl₁t₁ʃ/ (i) by abstract suffixation
    /f₁ɑːl₁t₁ɑ/ (ii) by syncope
    /f₁ɑːl₁t₁ʃ/ (iii) by voice and manner dissimilation

It might be asked why for the base form above I have not postulated /f₁ɑːl₁t₁ʃ/ and given desyncope in the derivation of /f₁ɑːl₁t₁ʃ/. This could be done of course. As it is, the actual surface form acts as a good starting point as then the various steps on the way to /f₁ɑːl₁t₁ʃ/ can be seen clearly. A second query might be: is not the very existence of the surface form /f₁ɑːl₁t₁ʃ/ a denial of the validity of the syncope hypothesis? In view of optionally syncopated forms like (18)b it is not. Desyncope is obligatory in Irish but syncope is an optional but strongly favoured rule. The non-existence of fáilt /f₁ɑːl₁t₁ʃ/ along with fáilid may be an accident of attestation.

Before leaving this examination of the agency suffix two conditions on it must be considered. Firstly for the syncope which I have been discussing to operate the segments
which cluster must be homorganic. As the first segment is a sonorant and as there are 
three positions for sonorants in Irish, labial, dental and velar and as the velar nasal only 
occurs with a following homorganic stop only two positions, namely labial and dental, 
would have to be specified. The labial position must be excluded being heterorganic to 
the /d/ of the suffix. This is evidenced by forms like

(24)  a  gliomach  ‘lobster’
     b  gliomadóir  ‘lobster-fisher’

Because of this only the dental position needs to be specified in the voice and manner 
dissimilation rule. This can be done with the feature [coronal].

(25)  ┌ + voice ┐  ┌ – voice ┐
       │ + cont │
   F  │ – cont │  /  [+ son] — — —
       │ + cor │
   └ + cor ┘  └ + cor ┘

An automatic palatal agreement rule would prohibit sequences such as /ntʃ/, /l̥tʃ/, etc. The 
features [high] and [back] in the relevant combination of values can be used to formulate 
this rule and it can be added at the end of the derivation to bring clusters which might 
disagree among their segments for the feature [palatal] into line. Although the palatal agreement rule is simple in its operation and responsible for 
converting (26)a into (26)b.

(26)  a  /ki:ltɔːrʃ/  
     b  /ki:ltɔːrʃ/  

it is complex inasmuch as it must have access to morphological information, In Irish 
assimilation is usually progressive so that (26)a should result in

(27)  */ki:ltɔːrʃ/  

but from this and other forms it is clear that the cluster arising from syncope on 
suffixation agrees in terms of palatality with the final consonant of the stem although this 
runs counter to normal phonetic assimilation in Irish. Ignoring this morphological fact 
would result in (27).

The second condition on agency suffixation also concerns the final consonant of the 
stem. Consider the Modern Irish forms

(28)  a  bád  /baːd/  ‘boat’
     b  bádóir  /baːdoːɾj/  ‘boatsman’

As there is just a single stem-final consonant in the stem (28)a one would expect /ədoːɾj/ 
but instead the form for a stem-final cluster is found. This has a simple explanation. No 
two consecutive syllables can begin with a /d/ so the /d/ of the suffix is deleted as is the 
unstressed vowel before it.⁶

Truncation may also feed the rule of second /d/ deletion. Consider the derivation of 
Modern Irish cladóir ‘sea-shore dweller’.

(29)  cladach  /kladɔʃ/  ‘sea-shore’
      /klad/  (i) by truncation
Because of truncation above a complicated derivation has ensued. In view of the fact that it has this result one would wonder why it should take place at all. Its motivation would seem to be to render a monosyllable of the stem before suffixation for as will be seen from the next case to be considered agency suffixation always implies a monosyllabic stem.

The second major agency suffix in Irish is also a borrowing (from English). It derives from the suffix ‘-er’ and can be seen in obvious loan words like

(30)  *siúinéir* ‘carpenter’ (< English *joiner*)

This and similar loans must be quite early as they show affricate simplification (/dʒ/ → /ʒ/) and sibilant devoicing (/ʒ/ → /ʃ/) in accordance with the strict loan-word phonology of Irish up to the later early modern period whereby no affricates or voiced sibilants were tolerated.

In the present-day language affricates are tolerated (Hickey, 1982: 150-151; de Bhaldráithe, 1953b: 15-17) but sibilants are still devoiced. As the result of a process of using the genitive for the nominative and of having English loan-words frequently end in -a /ə/, all forms with original -éir are now found in spoken Connemara Irish (de Bhaldráithe, 1953 a: 248) with the ending -éara⁷.

(31)  a  *báicéara* ‘baker’  (English loan word)
     b  *tincéara* ‘tinker’  (English loan word)

For the issue at hand however the use of the genitive for the nominative is irrelevant. What is important is that this ending involves a change in the final consonant of the stem.

(32)  a  *sgláta* /sklæːta/  ‘slate’
     b  *sgláitéara* /sklæːtʃeːrə/  ‘slater’
     c  *guna* /ɡəːna/  ‘gun’
     d  *guinéara* /ɡɪnʃeːrə/  ‘gunner’

On suffixation the stem-final consonant is palatalized. For the determination of the lexically stored Form of the suffix there are then two possibilities. The first is that along with /eːr/ additional information that the consonant preceding the suffix is palatalized is given much as with syncope where the resolution of a cluster is lexically specified as involving palatal or non-palatal consonants or a combination of these (see (13) above). This process I call the EXPLICIT PALATALIZATION RULE. The second possibility is that on suffixation the stem-final consonant adopts the inherent value for [palatal] which the initial vowel of the suffix has in accordance with the normal progressive assimilation of Irish. In this case it is [+ palatal] as /eː/ is a front vowel. This would be an example of a NATURAL PALATALIZATION RULE and would suffice in this case as all the stem-final consonants of bases which take /eːrə/ are either palatal already or palatalize. But in fact it must be regarded as an explicit palatalization rule which happens to coincide with a natural palatalization rule. It is explicit as it alters the form of the base to which it is added and natural as the change coincides with the inherent value of the suffix
vowel. However a suffix with a back vowel which also palatalizes would be explicit and unnatural, just as a front vowel which depalatalizes would be. The remaining fourth possibility, a back vowel which depalatalizes, is explicit and natural. For the analysis below I will characterize the rules which alter the value of the final consonants of stems as all being explicit and those which do not as being natural leaving aside the question of whether the alternation is inkeeping with or contrary to the inherent value for [palatal] of the suffix vowel.

Now compare the above situation with that of the /ədoːːɾ/ suffix. With this the non-palatal stems remain non-palatal whereas the palatal stems (all ending in a sonorant) palatalize the initial consonant of the suffix, see (16) above where /t/ → /tʰ/ /l/ //. One can see that for the /ədoːːɾ/ suffix (in its post-sonorant form /təɾ/) a natural palatalization rule applies as the suffix assumes the value of [palatal] which the stem-final consonant shows. On the contrary the palatalization effect of /eːɾ/ must be lexically specified as it does not allow a formation such as */gəɾeːɾ/ for the form in (32)d.

In order to arrive at a stem for suffixation, truncation may be applied to a given form. The truncated element is usually a verbal suffix as in

(33) bácaíl ‘bake’ /baːkaːl/ (i) by truncation
     /baːk/ (ii) by suffixation

resulting in a monosyllabic stem input to suffixation. Apparent exceptions to the monosyllable condition on suffixation are found in

(34) a feilméara /fəɾiːməɾə/ ‘farmer’
     b peaisínéara ‘passenger’
     c pinsínéara ‘pensioner’

The first of these has an epenthetic vowel between the stem-final consonant sonorant cluster which is added after all word-formation processes have applied by scanning the output of the word-formation rules for acceptability with regard to phonotactics. The second and third forms in (34) while having disyllabic sources in English tend to lose the second vowel by syncope in the spoken language.

(35) a peaisínéara → [pʰæːɾiːnːəɾə]
     b pinsínéara → [pʰinːɾiːnːəɾə]

2. Abstraction

Abstract nouns in Irish have been and still are produced with a variety of suffixes. From Old Irish (Thurneysen, 1946: 167-168) onwards one suffix dominates above all others. It had and has the form /əxt/ with some variation in its realization which will be the subject of remarks below. It is added to various types of stems, the interaction of stem and suffix forming the object of interest here. Consider to begin with a set of Early Modern Irish forms.
It is evident from these that palatalization occurs on suffixation. It can be ruled out as natural palatalization not only because the stem adapts itself to the suffix but also because the central vowel /ə/ is non-palatal of its nature anyway. Thus an explicit palatalization rule must be lexically specified. Not only that but the information for the suffix must have access to at least one item of information on the stem, namely that it is monosyllabic, for with disyllabic inputs there is no palatalization (see below). Note that the forms in (36) are neither truncated nor syncopated. But a large number of adjectives which syncopate add /əxt/ as well. Consider

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<td>36</td>
<td>a</td>
<td>bán /bɑːn/</td>
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<td></td>
<td>b</td>
<td>bāineacht /bɑːnəxt/</td>
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<td>dall /dɑːl/</td>
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<td>d</td>
<td>doilleacht /dəλəxt/</td>
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It should be noted in connection with these suffixes that explicit palatalization rules while involving the adoption of a certain value for [palatal] by a stem in its final consonant are never, in any morphological operation in Irish, inversion rules of the type

\[ \alpha_{\text{palatal}} \rightarrow [ - \alpha_{\text{palatal}} ] \]

but always of the type in (40) a or b.

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<td>a</td>
<td>socair /səkər/</td>
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<td>b</td>
<td>socracht /səkrəxt/</td>
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<td>c</td>
<td>milis /mɪlɪs/</td>
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<td>d</td>
<td>milseacht /mɪləxt/</td>
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An example of the former type is found when one proceeds with an examination of abstraction suffixation. Consider

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<td>38</td>
<td>a</td>
<td>garbh /gərv/</td>
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<tr>
<td></td>
<td>b</td>
<td>gairbhacht /gərvəxt/</td>
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An example of the former type is found when one proceeds with an examination of abstraction suffixation. Consider
(41)  

a  fearúil  /f³arul⁹/  ‘manly’  
b  fearúlacht  /f³arul⁹xt/  ‘manliness’

As the form in (41) a is itself suffixed (= /f³ar/ + /ul⁹/) one could view both /ul⁹/ and /ul⁹xt/ as lexicalised and so do away with a cumbersome explicit depalatalization rule for /xt/ when added to /ul⁹/. This solution seems to miss a generalization which can ostensibly be reached when one views further forms.

(42)  

a  galánta  /galα:ntæ/  ‘stylish’  
b  galántacht  /galα:ntæxt/  ‘stylishness’

Now if /ul⁹/ and /ul⁹xt/ are regarded as lexicalised then one requires an additional rule which stops the generation of

(43)  */galα:nt⁹xt/

with palatalization. Such a rule would specify that explicit depalatalization occurs with all polysyllables. It would account for both (41) b and (42) b. However this single rule runs into difficulties of its own with forms like

(44)  

a  siúrālte  /s³υrə:l⁹ltæ/  ‘certain’  
b  siúrālteacht  /s³υrə:l⁹ltæxt/  ‘certainty’

An examination of further examples of abstract nouns shows that a natural palatalization rule applies to all stems which are not monosyllables. The suffix does not change the value for [palatal] of the stem-final consonant. Thus the seeming generalization linking (41)b and (42)b turns out to be spurious and /ul⁹/ and /ul⁹xt/ must after all be lexicalised or a unique rule given which depalatalizes /ul⁹/ on suffixation of /xt/ which is the same in terms of complexity.

Truncation has a role to play in this suffixation as well. Disyllabic forms which end in /α/ have this truncated and /xt/ added after truncation with the explicit palatalization rule operating. The procedure is thus similar to that for deriving (32)b and d from (32)a and c above.

(45)  

/ʃada/  (i) by truncation  
/ʃa/  (ii) by suffixation  
/ʃadx/  (iii) by explicit palatalization rule

But there is a further manifestation of the /xt/ suffix which is found with a number of monosyllables such as fada when truncated. The alternative abstraction suffixation is then.

(46)  

/ʃa/  (i) by truncation  
/ʃdx/  (ii) by suffixation
Given the existence of the form *fadaíocht* ‘length’ it might seem that there are two suffixes. However they represent two manifestations of the same suffix. This is given in (47).

(47) Suffixation of monosyllables

(i) add suffix /əxt/
(ii) a palatalize stem-final consonant or
    b add palatal vowel after it.

The exclusiveness of the alternative suffixation rules in (ii) accounts for the non-existence of either (48)a or b.

(48) a */fid̂i:xt/  b */fadəxt/

In both (45) and (46) I have argued that truncation has taken place. Arguments could be brought forward however to show that suffixation is not preceded by truncation at all and alternative derivations can be supplied for forms with final shwa and without it, such as *fada* and *trom*.

(49) a fada /fad/ ‘long’
    /fadəxt/ (i) by /xt/ suffixation
    /fid̂i:xt/ (ii) by explicit palatalization rule

b trom /tru:m/ ‘heavy’
    /tru:məxt/ (i) by /xt/ suffixation
    /tru:m̂əxt/ (ii) by shwa insertion
    /trim̂əxt/ (iii) by explicit palatalization rule

But while a shwa insertion rule will deal with the derivation of *truimeacht* ‘heaviness’ a truncation rule is still required to derive those monosyllabic forms which add /i:/ instead of palatalizing the stem-final consonant. If no truncation rule is available then the derived form in (46) would be /fadai:xt/ which is phonotactically impermissible in Irish (apart from not being attested) as a shwa cannot precede a long vowel anywhere.

Palatal vowel suffixation as in (46) is frequently the only kind possible with a given stem. This has a clear diachronic explanation. Consider the Old Irish forms (Thurneysen, 1946: 167).

(50) a fili /fili:/ ‘poet-NOM’
    b filed /filiːd̂/ ‘poet-GEN’
    c filedacht /filiːd̂əxt/ ‘poetry’

Originally there was only /əxt/ as a suffix but the vocalization of the sequence /iːd̂/ to /i:/ lead to it being used as an alternative for abstraction suffixation with forms which did not have /iːd̂/ to begin with.

In the present-day language the alternatives for suffixation given in (47) (ii) are reduced to a single choice when the stem already ends in a palatal consonant. Here only palatal vowel suffixation is found. Thus the modern equivalent of (50)c is

(51) filiocht /filiːiːxt/ ‘poetry’
which is derived as is *fadaiocht* in (46) (with truncation of word-final /ə/). It can be seen that this type of derivation has been reached by /i:/ achieving suffix status when one examines forms which in Old Irish did not have a genitive in /iði:. One such instance is Old Irish *delb* ‘shape, form’ which had the genitive *delbe* ~ *delbae* (Thurneysen, 1946: 100) and has the following abstract noun form in Modern Irish.

(52) *deilbhiocht* /di:el̃i:xt/ ‘morphology’

In connection with this a second situation needs to be considered. Quite a number of forms which act as the input for suffixation already have long high vowels in their input forms (although these may be morphologically complex in themselves, see (53)c) where there is no such process operating like that in the derivations of (51) and (52).

(53)  
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<tbody>
<tr>
<td>a</td>
<td><em>bulai</em> /bəli:/</td>
<td>‘bully’</td>
</tr>
<tr>
<td>b</td>
<td><em>bulaiocht</em> /bəli:xt/</td>
<td>‘bullying’</td>
</tr>
<tr>
<td>c</td>
<td><em>comrádaí</em> /kəmrə:di:/</td>
<td>‘comrades’</td>
</tr>
<tr>
<td>d</td>
<td><em>comrádaiocht</em> /kəmrə:di:xt/</td>
<td>‘comradeship’</td>
</tr>
</tbody>
</table>

It is obvious that in these cases the abstraction suffix has been reduced from /xt/ to /xt/. Now there are many polysyllabic forms which end in a final shwa and given the possibility (for the forms in (53) and their like) that the suffix be reduced to /xt/ it might be supposed that in a set of forms like

(54)  
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</thead>
<tbody>
<tr>
<td>a</td>
<td><em>forasta</em> /fərəsta/</td>
<td>‘stable’</td>
</tr>
<tr>
<td>b</td>
<td><em>forastacht</em> /fərəstaxt/</td>
<td>‘stability’</td>
</tr>
</tbody>
</table>

/xt/ is added to the entire stem of (54)a with shwa truncation reserved for the special case of underlyingly monosyllabic forms.

Whether this view is correct can be ascertained by examining a further set of derivations. Consider the group of adjectives in /əx/ which also form abstract nouns.

(55)  
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<tbody>
<tr>
<td>a</td>
<td><em>gionach</em> /gənəx/</td>
<td>‘voracious’</td>
</tr>
<tr>
<td>b</td>
<td><em>gionacht</em> /gənəxt/</td>
<td>‘voraciousness’</td>
</tr>
</tbody>
</table>

Here I assume that there is no truncation either. For abstraction suffixation truncation is reserved for underlyingly monosyllabic forms ending in /a/. For if one had truncation of /əx/ as in agency suffixation then the input to abstraction suffixation in (55) would be /gənəlx/. But this would automatically meet the structural description of the explicit palatalization rule which would give the form /gəni:məxt/ after suffixation which is incorrect. Because of this the abstraction suffixation in (55) has been further reduced to /xt/ but only because of the following condition.

(56) /xt/ → /t/ /x/ –

which arises as /əx/ is not permissible phonotactically. That truncation is not involved in forms with final /əx/ can be seen from contrasting sets which have palatalization applied or not, depending on their base form.
Lastly one further manifestation of the abstraction suffix calls for comment. In a number of forms the suffix appears to begin consonantally. Consider the Modern Irish forms

(58) a méirín ‘small finger’
   b méirinteacht ‘act of fiddling with something’

(de Bhaldráithe, 1953a: 253)

An examination of these and similar forms shows that the /t/ which is found suffix-initially only occurs after /n/. If one considers Early Modern Irish forms then one finds /t/ after /l/ also as in

(59) a fearúil /farul1/ ‘manly’
   b fearúltaacht /farul1taxt/ ‘manliness’

This is not something which is morphologically conditioned. Rather in Irish there is a tendency to develop a voiceless alveolar stop after certain contiguous segments. This gives /o’rsi:t/ for arís ‘again’ with an epenthetic /t/ for example. Just such a T₁³ is present in (58)b and (59)b, which is supported by the existence of T after the sonorants L and N in countless other forms, not least among agency nouns (see (16) above for example). The presence of suffix-initial T after the sonorants L and N in the derivational forms for agency nouns may have exerted pressure towards a similar situation developing with abstraction suffixation. Thus the voiceless homorganic stops which arose through syncope in the one area would have been introduced by epenthesis in the other. With the diminishing force of analogy the stops were deleted after the lateral sonorant but are still to be found after the nasal.

In conclusion I should add that in the discussion of agency and abstraction above I have continually referred to ‘forms’ which are underlying, act as inputs, etc. This very general term is deliberate and reflects the fact that, for all the processes considered, affiliation to a specific lexical class plays no role. The input for agency derivation may come from the lexical class noun or verb. Equally for abstraction derivation both nouns and adjectives serve as inputs, although for the majority of my examples I have taken adjectives. In fact the input for abstraction derivation can itself be the output of agency derivation, something which can be seen from the following set of forms.

(60) a feilméara ‘farmer’
   b feilméaracht ‘farming’
Notes

1. Though its distribution in Modern Irish is vastly restricted in comparison with Old Irish.

2. The arguments for and against deletion in Irish are basically similar to those used for English (see Kastovsky, 1980: 219): greater generalization, economy of derivations, etc.

3. This is a decisive difference between it and epenthesis which always separates segments of a phonotactically impermissible cluster. But the two phenomena are closely related not least in the conditions which govern their appearance. On these and the interrelationship of epenthesis and syncope, see Hickey (1985).

4. Seen from the point of view of distinctive feature theory this is an abbreviation for combinations of the two features [high] and [back]. In Irish however where palatalization or velarization has a strictly morphological function there is justification in having a separate feature, viz. [palatal], apart from the phonological ones, which characterizes the strictly morphological role which palatalization and velarization play in Irish.

5. Note that I refer globally to Irish phonotactics, syncope, truncation, etc. when there is no discernible difference between their manifestation in Old Irish and that in Modern Irish. If there is, the particular statement is specified for a certain stage of the language.

6. That this condition is correct can be seen from dissimilations of voiced alveolar stops which have occurred throughout the history of Irish. Early Modern Irish dadamh gives present-day Irish /tadə/ with devoicing of the first /d/.

7. MacEoin (1974: 63) comments on this and a variety of other forms where the genitive and nominative interchange. He rightly remarks that with the collapse of the older ease system and the loss of the accusative and dative only the nominative and genitive (and the strictly non-grammatical vocative) were left and these then interacted. This interaction was furthered by the fact that the form of the genitive in one nominal class was frequently the same as that of the nominative in another class.

8. Though by no means always. Many English loans are disyllabic although the English source was monosyllabic. Thus gun → guna in Irish. This /ə/ is added in many places and not always those where, for the Middle English forms which may have been the source (MacEoin, 1974: 63f.), the unstressed shwa, later lost in English, can still be assumed to have been pronounced.

9. Early Modern Irish is indicated by the spelling (which has been since reformed, though with little or no effect on the forms quoted below). The pronunciation is based on that of Connemara Irish today. Note that there are vowel alternations (back to front vowel) which cooccur with palatalization in the forms given. Whether this vocalic gradation was already present in Early Modern Irish is difficult to say as the spelling does not indicate it and no external evidence points to vocalic gradation having had occurred by some particular point in time.

The upshot of this is that the pronunciation offered in this section is that of contemporary (Western) Irish and the orthographical forms are Early Modern Irish (with the proviso that there are similar to those of Modern Irish) although the processes being dealt with, such as syncope, reach back into Old Irish and the
stages of the derivations which I postulate, if they are correct for the modern language, were certainly correct for previous stages of it as well.

10. Palatalization also occurs when adjectives such as those in (36) a and c are altered from the positive to the comparative degree. But it would not be an explanation of palatalization here to remark that it occurs because the abstract nouns derive from the comparative form of adjectives. Firstly allowing such a derivational history for abstracts would just shift the problem of the conditions for palatalization to adjectives and secondly and more seriously it can be objected that the comparative form of adjectives and abstract nouns are parallel and do not stand in a derivational relationship. To prove that they do one would have to show conclusively that native speakers when forming abstract nouns first change the adjective into the comparative degree and then add a further suffix to give the abstract noun. While such pathways through a language’s morphology may be useful didactically it is more than doubtful that speech production occurs on similar lines.

11. A further argument against an insertion rule at this point is that there is already a deletion rule for agency noun formation. Having an insertion rule for abstraction formation would mean that the grammar would be mixed in a manner which would run counter to the aim of maintaining it as simple as possible.

12. The genitive case was used to provide the base for abstraction suffixation already in Old Irish, see Thurneysen (loc. cit.).

13. This is a convention devised by the author where capital Italic letters are cover symbols for palatal and non-palatal versions of a segment. Thus \( T = /\mathbf{t}/ + /\mathbf{t}/, \) \( L = /\mathbf{l}/ + /\mathbf{l}/, \) \( N = /\mathbf{n}/ + /\mathbf{n}/, \) etc.
References

Aronoff, Mark

Chomsky, Noam — Morris. Halle

De Bhaldraithe, T.
1953 a  *Gaeilge Cois Fhairrge. An deilbhiocht* (Dublin Institute for Advanced Studies).

Hickey, Raymond

Kastovsky, Dieter

MacEoin, Gearóid S.

Thurneysen, Rudolf
1946  *A grammar of Old Irish* (Dublin: Dublin Institute for Advanced Studies).