Exceptions to sound change and external motivation

Raymond Hickey
Essen University

Abstract

This contribution looks at typical changes of sounds and views these as sets of changes the members of which are linked. It also considers the directions of sound changes, considering these as natural pathways (in the case of lenition) or trajectories among vowel movements in which different vocalic elements stand in a spatial relationship to each other. As data the contribution examines a number of changes in English in the capital of Ireland, Dublin, which has undergone considerable change in the past fifteen years or so. The present-day data is seen in a panchronic context and parallels are drawn to attested historical changes which show both regularities and principled exceptions to these. The latter are a particular focus in the theoretical discussion.

Sound changes typically come as sets of changes, especially with vowels where a group of sounds shift together. Such changes can be expressed as a general movement, such as vowel raising, vowel lowering, diphthongisation, fronting and the like. Sometimes with such changes the entire set of potential elements is not affected, i.e. there is some exception to the change. Normally, such exceptions are explained via internal considerations, such as the distribution of elements in vowel space (phonological argument) or the avoidance of homophony (lexico-grammatical argument).

But there may well be recalcitrant cases where an internal explanation is unconvincing. With the help of changes in present-day Irish English, I will attempt to show how exceptions affecting groups of sounds can arise, either from the beginning of a change or during its course. Furthermore, a combination of internal and external factors may be responsible for the precise manifestation of a change. The data for this analysis is taken primarily from contemporary Dublin English, which has recently undergone major change (Hickey 1999). However, the forces operating here are taken to have applied during history so that the present discussion can be considered of relevance to developments and change in the past.

1. Lenition in Dublin English

In positions of high sonority – intervocally and post-vocally before a pause – alveolars stops are lenited in all forms of southern Irish English (Hickey 1996). Lenition can be seen as a scale with the full plosive /t/ at one end and zero at the other.
In between stages are attested in which the degree of closure is steadily reduced before reaching the other end, namely zero. The entire lenition cline is found in vernacular Dublin English as follows.

(1) Vernacular Dublin English

<table>
<thead>
<tr>
<th>t</th>
<th>_t</th>
<th>?</th>
<th>h/r</th>
<th>Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>button</td>
<td>but</td>
<td>water</td>
<td>water</td>
<td>what</td>
</tr>
</tbody>
</table>

For non-local, more standard varieties lenition is only attested for the first stage, that is to a fricative, with one or two lexicalised cases where [h] is found, e.g. with the word for Saturday which has internal [h] in Irish.

(2) Supraregional southern Irish English

<table>
<thead>
<tr>
<th>t</th>
<th>_t</th>
<th>(– h, lexicalised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>button</td>
<td>but</td>
<td>Saturday [ˈsæhərdə], Irish Sahairn</td>
</tr>
</tbody>
</table>

Historical documents attest to this type of stop lenition since the late Middle Ages (Hickey 2007a: Chapter 2). But for supraregional Irish English, only lenition from a stop to a corresponding fricative is found. Why was the path of lenition not continued in this type of Irish English? The answer would seem to lie in the maintenance of phonetic distance from local, vernacular Dublin English. Recall that supraregional Irish English arose out of middle-class Dublin English usage during the late 19th and early 20th centuries (Hickey 2005) so that early supraregional speakers would have been aware of vernacular Dublin English and would have been motivated to avoid phonetic merging with it in the area of lenition, for instance by not tolerating glottalisation as an advanced stage of _t_-lenition as in (1) above.

2. Retraction of diphthong onset

The onset of the diphthong in the PRICE lexical set can be retracted in Irish English. However, to discuss this it is necessary to introduce a second lexical set, namely PRIDE, which has the diphthong /aɪ/ before a voiced consonant. Various extensions of Wells’ original 1982 set have been suggested for just such purposes, see the discussion in Foulkes and Docherty (eds, 1999). The retraction of the diphthong onset is something which began some time ago (it became relatively widespread in the early 1990s) and is connected with the Dublin Vowel Shift in its early stages (Hickey 2007b).

The motivation for this retraction is external: the vowel shifts which occurred during the 1990s in Dublin were motivated by the desire of those people without a strong identification with traditional local Dublin culture to separate themselves from those with clearly local Dublin accents (Hickey 1999). In this respect the recent changes in Dublin English are an example of dissociation (Hickey 2000), the reverse of accommodation as understood by linguists such as Peter Trudgill (see the discussions in Trudgill 1986).

Before these changes were initiated, the diphthong in both the PRICE and PRIDE lexical sets was [ar]. Consider briefly what changes are possible for the onset of this diphthong.
(3) Possible shifts for diphthong onset in the PRICE lexical set

a. centralisation /ai/ → [əi] (local Dublin English)
b. fronting /ai/ → [ei] (vernacular northern Irish accents)
c. retraction /ai/ → [ai] (new Dublin English)

The centralised onset in [əi] (3a above) was, and is, typical of vernacular Dublin English. A movement away from this pronunciation was a trigger for the vowel shift in the first place. Hence using an onset in the region of schwa was clearly not an option in non-local Dublin English. A fronted onset (3b above) would have been possible but this would have led to [ei], a pronunciation reminiscent of vernacular northern Irish accents. However, the retracted onset in [ai] was not found elsewhere in Ireland and so represented a new option without previous associations and it was this movement (3c above) which came to be favoured by non-local speakers.

But the preference for a retracted onset did not lead to the immediate use of this with all non-local speakers. The retracted onset showed internal conditioning of the type well-known from the phenomenon of Canadian Raising (Chambers 1973). What happened in new Dublin English is that the shift of [ai] to [ai] occurred preferentially before voiced segments, i.e. in the PRIDE lexical set, Type 1 in (4) below. Some speakers soon adopted the shift totally, i.e. they came to have it in both the PRIDE and the PRICE lexical sets, Type 3 in (4) below. The configuration which was not attested for any speakers was retraction for the PRICE lexical set but not for PRIDE, Type 2 in (4) below. What this means is that, although the shift was externally motivated, an internal constraint limited the manner in which it was carried to its conclusion. This constraint results from the fact that vowels before voiceless segments are somewhat tenser and shorter than before voiced ones. This presented an obstacle to diphthong onset retraction in its early stage. Of course, if a language or variety carries a shift through to completion, then the new pronunciation becomes phonologised and phonetic constraints like that just described cease to play a role anymore.

(4) Progress of diphthong onset retraction in new Dublin English (in the 1990s)

<table>
<thead>
<tr>
<th>Type 0</th>
<th>PRICE</th>
<th>PRIDE</th>
<th>comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[praɪs]</td>
<td>[praɪd]</td>
<td>outset, before vowel shift</td>
</tr>
<tr>
<td>Type 1</td>
<td>[praɪs]</td>
<td>[praɪd]</td>
<td>early stage of shift</td>
</tr>
<tr>
<td>( Type 2</td>
<td>[praɪs]</td>
<td>[praɪd]</td>
<td>not attested )</td>
</tr>
<tr>
<td>Type 3</td>
<td>[praɪs]</td>
<td>[praɪd]</td>
<td>advanced stage of shift</td>
</tr>
</tbody>
</table>

3. Vowel shifts in new Dublin English

For the remainder of this contribution I would like to deal with an issue related to that just discussed. This is the movement of long vowels which took place together with diphthong onset retraction in new Dublin English in the 1990s. It constitutes the main shift in vowel space which I have labelled the Dublin Vowel Shift (Hickey 1998, 1999). A summary of the main movements in the vowel shift can be seen in the following.
(5) a. retraction of diphthongs with a low or back starting point
   \[
   \begin{align*}
   \text{time} & \quad [\text{tæ}m] \rightarrow [\text{tæ}m] \\
   \text{toy} & \quad [\text{tɔi}] \rightarrow [\text{tɔi}], [\text{tɔi}]
   \end{align*}
   \]

b. a raising of low back vowels
   \[
   \begin{align*}
   \text{caught} & \quad [\text{kɔːt}] \rightarrow [\text{kɔːt}, [\text{kɔːt}]
   \end{align*}
   \]

One can recognise that the vowel shift is a movement back and up for mid-low and low-back vowels. As opposed to other vowel changes, like that with the MEAT and MEET lexical sets (embodying Middle English /e:/ and /æ:/ respectively), it has not lead to vowel mergers as can be seen from the following two charts.

![Figure 1. Changes in vowel constellations in Dublin English](image)

This fact is of importance for the present contribution because one part of the vowel shift in its early stages has been reversed. This is the realisation of vowels before tautosyllabic /r/. If mergers had taken place in the vowel shift then the reversal of part of the shift would have involved the de-merging of collapsed distinctions, an unlikely development.

Before considering this aspect of the shift, however, remarks are offered here on how such a shift can start, i.e. what trajectory low vowels can embark on when speakers begin to vary their realisations.

3.1. What can happen to low vowels?

The three directions of movement, outlined for diphthong onsets in (3) above, can apply to low vowels, long or short. In the history of English, it is fronting or retraction which is largely attested, though other languages show centralisation, e.g. Irish where words like agus ‘and’ and cat ‘cat’ have become ['æɡəs] and [kat] in western Irish.

There is a general rule of thumb, for more standard forms of English at least, that
short vowels front and long vowels retract. Thus in southern British English one has short vowels occupying a more front position than the corresponding long vowels.

(6) **Distribution of low vowels by length in southern British English**

Range: between [æ] and [a:]

Short low vowels: *track* [træk], *match* [mætʃ], *clap* [klæp]

Long low vowels: *pass* [pɑ:s], *staff* [stɑ:f], *bath* [baθ]

At the risk of over-statement, one can say that if a language or variety has a difference of length for low vowels and these vowels are not in the same position, then the long vowel will be further back than the short one. This holds for a large number of languages in Europe, Dutch and Hungarian being notable exceptions, however.

These statements apply to a range of vowel values, all in the low area, i.e. between [æ] and [a:]. They notably exclude developments conditional on surrounding segments such as a preceding /w/ or a following nasal.

(7) **Realisations conditioned by adjacent segments**

retraction after /w/ as in *wash* [wɒʃ] from earlier [waf]

raising before former nasal: English *goose*, *tooth*; German *Gans*, *Zahn*

retraction before nasal: northern Irish English *hand* [hɔnd], *family* [fɒmli].

But what if low vowels are not just fronted or retracted but also raised? Then either the long and short vowels (or possibly both) may move out of the low into the mid and eventually into the high area. This has been the fate of West Germanic /a:/ which moved in one of two main directions as shown in (8).

(8) **Differential shift of West Germanic /a:/**

<table>
<thead>
<tr>
<th>German</th>
<th>Fronted to /e/</th>
<th>German <em>Heim</em> /haim/ &lt; /heim/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scots</td>
<td>Fronted to /e/</td>
<td>Scots [hem]</td>
</tr>
<tr>
<td>English (south)</td>
<td>Raised to /œ/, /œu/</td>
<td>English <em>home</em></td>
</tr>
</tbody>
</table>

Here one can see that fronting and raising is typical of Scots and German, but raising on a back trajectory is found in southern British English as many Germanic cognates illustrate, compare English *home*, *ghost*, *toe*, *stone* with German *Heim*, *Geist*, *Zeh*, *Stein*.

It is not possible to predict which trajectory will be taken on raising, a front or a back one. Furthermore, such raising can be sensitive to the distribution of other vowels in phonological space and involve further shift. This has happened historically in Norwegian and Swedish where the raising of certain instances of low back vowels, e.g. *få* [fɔ:] ‘get’ was probably responsible for the raising of mid back vowels, e.g. *roos* [rus] ‘rose’ which in turn led to a fronting of *u* and the secondary articulation of lip-
rounding to avoid merger with the already present y vowel, cf. *hus* [hʉs] ‘house’ and *sylt* [sy:lt] ‘jam’.

But raising can disregard the configuration of vowel space into which the raised vowels are moving and cause mergers. This has happened historically in English, consider the merger of ME /e:/ with /e/ with later raising to /i:/, cf. *meat* and *meet*, both [mɪt], *beat* and *beet*, both [bɪt], etc.

Nonetheless, the space vacated by the raised vowels may come to be occupied by new instances of the non-raised vowel. This has occurred in the history of English with new cases of /a:/ arising (i) through the lengthening of short /a/ before voiceless fricatives, cf. *staff, bath, grass* and (ii) the loss of /r/ after /a/ as in *start* [stɑːt].

So despite mergers on raising there may be something to be said for symmetry in phonological space after all, at least for vowel movements do not lead to large areas of this space remaining permanently empty.

3.2. The effect of /r/ on preceding vowels

In the above discussion I have noted that nasals have a general raising effect on preceding vowels. A liquid, /l/ or /r/, can also affect a preceding vowel, especially if the /l/ is velarised, leading to retraction. For example, with *shack* and *shall* in RP the a in the second word is not as far forward as in the first word. The retraction before /r/ was probably true of southern varieties of British English while these were still rhotic. This can be assumed because today the pronunciation of an a-vowel before an orthographic r is retracted, cf. *card*, previously [kɑːd], now [kɑːd]. The same type of retraction is found in mainstream varieties of Dublin English, this time with the r still present.

These effects have a phonetic motivation. Raising before nasals can be accounted for acoustically. Because the nasal cavity is open for nasals, an anti-resonance occurs which interacts with that in the oral cavity. This anti-resonance sets in between 800 and 2000 Hz (Fry 1979: 118f.; Lieberman 1977: 177). The energy maximum in the first formant of the nasal is always low because of the anti-resonance. This has the effect of depressing the first formant of the flanking vowel. Consider the following representative values for the first and second formants of the five most common vowels (Fry 1979: 79).

(9) Typical formant values for vowels

<table>
<thead>
<tr>
<th></th>
<th>F1</th>
<th>F2</th>
<th>(in Hertz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i/</td>
<td>360</td>
<td>2100</td>
<td></td>
</tr>
<tr>
<td>/e/</td>
<td>570</td>
<td>1970</td>
<td></td>
</tr>
<tr>
<td>/a/</td>
<td>750</td>
<td>1750</td>
<td></td>
</tr>
<tr>
<td>/o/</td>
<td>600</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>/u/</td>
<td>380</td>
<td>950</td>
<td></td>
</tr>
</tbody>
</table>

Nasals depress F1, causing vowel raising
R-sounds depress F2, causing vowel lowering and retraction

The values for F2 with nasals are not important because nasals only have a very weak second formant. But for F1 one can maintain that the lower its value the higher the vowel. Just as with nasals there is a clear acoustic effect of /r/ on a preceding vowel.
This effect is one of lowering the vowel. With a vowel which precedes an /r/ there is a reduction of the second formant during the transition to the sonorant. This is particularly clear if the original vowel is a high front or back vowel (Fry 1979: 120).

3.3. Vowels before /r/ in Dublin English

At the beginning of the Dublin Vowel Shift in the 1980s low vowels were retracted and raised unconditionally, that is also before /r/, e.g. smart [smɔ:rt] ~ [smɔːr:t]. But if one considers new Dublin English today (2006) then one finds a central, if not to say fronted vowel before /r/, i.e. [smaːt] ~ [smaːt].

(10) Retraction and fronting of vowels before r

Early ‘Dublin 4’ accent (1980s)

initial retraction and raising before /t/: smart [smɔ:rt] ~ [smɔːr:t]

Later new Dublin English accent (late 1990s, 2000s)

no raising but fronting before /t/: smart [smaːt] ~ [smaːt]

The rest of the vowel shift has continued along its trajectory: raising along a back path with higher values for long vowels and for diphthongs in this area.

What needs to be answered is the question why vowels before /r/ behaved differently in this set of changes, by reversing initial raising and regaining a low and somewhat fronted realisation. Vowels before /r/ (Hickey 1989) were detached from the general shift, moving back closer to the starting position with all other vowels continuing along the trajectory which was taken at the beginning of the shift.

The question which is of concern here can be put as follows: is there anything in the phonetics of /r/ which would cause vowels before it to break away from the general movement back and up which these vowels were participating in? The answer would appear to be ‘no’. But there was still a reason for vowels before /r/ detaching themselves from the vowel shift in recent Dublin English. The reason lies in speaker attitudes and shows how external factors can affect internal movements. Consider the following explanation.

3.4. Why ‘Dortspeak’ failed

In the 1980s the new pronunciation of Dublin English was labelled the ‘Dublin 4’ accent (after a fashionable suburb of Dublin where it was ostensibly found). The name for the accent went through a few changes in the courses of the late 1980s and early 1990s. It came to be abbreviated as a ‘D4’ accent (a term still found). But the name of the suburban railway known as the Dart (an acronym deriving from Dublin Area Rapid Transport), a commuter train, mainly in the southern parts of the city, came to be used for the supposed accent of the people who lived in the southside suburbs. The label Dartspeak was coined and found favour among Dubliners. This label was then given a particular pronunciation with a retracted and rounded vowel, i.e. [dɔːtspik], and came to be written Dortspeak (and was much commented on by journalists, broadcasters and writers).
As the 1990s proceeded and Ireland entered a period of unprecedented economic prosperity, ‘Dortspeak’ became less and less ‘trendy’ and began to date. Salient features of this pronunciation, such as the retracted /æ:/ vowel before /r/, and to some extent the retracted onset for /ai/, were no longer ‘cool’ and young speakers began to avoid them (Hickey 2003). The pronunciation of Dartspeak as [dɔ:tsp:i:k], i.e. Dortspeak, is now regarded as ‘stuffy’ and ‘uncool’ and the present pronunciation of Dartspeak is [dæ:tsp:i:k] ~ [da:tsp:i:k] with a central to front vowel before the /r/ in the first syllable.

But curiously the raising of (non-rhotic) back vowels and, to a lesser extent, the retraction of /ai/, which were also central parts of the earlier ‘Dortspeak’ accent, did survive and are defining elements of the broad-based Dublin vowel shift as found later in the 1990s and into the 2000s. An obvious justification for their survival is that these shifts support the dissociation from local Dublin English which is still a goal of speakers of new Dublin English. The values which did not occur before /r/ were perhaps not as salient as the raising of a before r. For instance, none of these pronunciations was used in a label for, or reference to, the new pronunciation.

4. Conclusion

This contribution has looked at language change in current Dublin English with a view to throwing light on similar changes at a greater time depth. Along with other historically attested cases, this current change shows that speakers would seem to have some notion of phonological vowel space and that they participate in changes involving sets of elements within this space. These elements appear to move together, thus avoiding mergers (see Figure 2 above).

Exceptions to sound shifts, such as the lowering and fronting of vowels before /r/ just discussed, show that external factors – here association with salient features of an accent which has become old-fashioned – can cause one particular subset of vowels in a specific environment to be detached from a general vowel shift and indeed to move in the opposite direction, i.e. to be lowered and fronted rather than retracted and raised.

Internal considerations are not enough to account for this. It is true, as has been explained above, that /r/ has a general lowering effect on preceding vowels. But the initial stages of the Dublin vowel shift show that vowels before /r/ can and did partake in the raising. Furthermore, mid-open back vowels before /r/ have been raised to mid-closed position with all speakers of new Dublin English, that is with those speakers who have lowering and fronting of /a/ before /r/. That means that these speakers have [foːr] instead of [fɔːr] so that for and four rhyme with the higher vowel.

In the context of the current volume the question is whether there is something here which is of relevance to historical linguistics. If one can assume that the uniformitarian principle applied in previous centuries, i.e. that the same psycholinguistic and sociolinguistic principles which operate in language production and use today were valid in the past, then the reasons for exceptions in language change, previously regarded as internally motivated, may be sought in external factors. The task for the historical linguist in such cases would be to identify what such factors could have been and to demonstrate that it was external conditioning which disturbed the symmetry which appeared to derive from purely internal patterning.
References