Introduction

- English is a language with an unusually complex intonation system
  - exhaustively described in research monographs and L2 textbooks
  - exhaustingly acquired by some learners

- In this talk I will
  - add to the complexity by looking at dialects
  - reassure you that we can identify priorities
I want to present dialect variation in intonation to show the range of intonation encountered beyond the RP / GenAm descriptions to reveal what is highly variable and thereby highlight what is core, constant, and essential for communication and therefore acquisition by the L2 learner.
What is intonation made of?

- Structured variation in various acoustic parameters
  - fundamental frequency (heard as ‘pitch’)
  - duration
  - intensity
  - with voice quality, esp. creak, in support

- variation in these parameters is tightly *aligned* with particular segmental events
How is it analysed?

- **Listening**
  - in a way informed by training in a model of intonation
- **Computer displays of acoustic parameters**
  - fundamental frequency (‘pitch’)
  - spectrogram (frequency-energy distribution over time) to show, crucially, how pitch aligns with segments and words
How is it represented?

- We can represent intonation
  - acoustically
    - visualising the physical signal
    - using techniques of physics
    - with no categories imposed
  - linguistically / phonologically
    - reflecting the hypothesised linguistic structure
    - inevitably imposing categories
Typical ‘British School’ analysis

- Explicit internal structure to the IP
- Iconic symbols for categories of pitch movement beginning on stressed syllables
- Phonetic representation: interlinear ‘tadpole’ diagram with dots for syllables
- Stressed / unstressed syllables; ‘kinetic’ pitch indicated

Diagram:
- There's
- Pre-head
- Head: no need to interfere with it
- Nucleus+tail
- Explicit internal structure to the IP
- Iconic symbols for categories of pitch movement beginning on stressed syllables
- Phonetic representation: interlinear ‘tadpole’ diagram with dots for syllables
- Stressed / unstressed syllables; ‘kinetic’ pitch indicated
Autosegmental-Metrical (AM) transcription
• High and Low tones
• singly and in combination
• associated with prominent syllables & boundaries
• this variant devised for the IViE project

Spectrogram with ‘pitch’ below
• purely physical analysis
• shows timing of segments
• and alignment of pitch with sounds
Categories and meaning

- Given categories, combinations (‘tunes’) can be associated with meanings (though rarely one-to-one):
  - L* H*+L 0% ‘contradiction contour’ [previous slide]
  - H*+L H% ‘surprised question’
English intonation as taught

- Based on RP or GenAm models
- Involves very specific and detailed associations of ‘tunes’ and meanings
- For RP, works widely used include:
  - O’Connor & Arnold (1961/1973) *The intonation of colloquial English*
  - Wells (2006) *English intonation: an introduction*
English intonation as heard

- The British Isles exhibit a rich diversity of intonation patterns
  - receptively, the learner needs to expect patterns well outside those of the textbook
  - good thing: the variability means that native speakers have a broad tolerance

- The next section will show the diversity
  - it’s based on a Cambridge project c. 2000
The IViE project

- Intonational Variation in English
  - official title ‘English Intonation in the British Isles’
  - funded by ESRC Grant R000237145 to the University of Cambridge
  - PIs Francis Nolan, Esther Grabe; RAs Kimberley Farrar, Brechtje Post
The IViE data

- Teenage subjects
  - read
    - sentences; and the ‘Cinderella’ fairy tale
  - re-told the story in their own words
  - engaged in dialogue
    - ‘map task’
    - discussion of controversial topics
Samples taken from the read story:

Once upon a time there was a girl called Cinderella. But everyone called her Cinders. Cinders lived with her mother and two stepsisters called Lily and Rosa. Lily and Rosa were very unfriendly and they were lazy girls… ETC
Cambridge

Belfast
Bradford (Asian) ‘Cinderella’

Bradford (Asian) ‘Lily and Rosa were… [very unfriendly]’
An aside

- If you ever want to induce speech errors experimentally in read speech, try
  - ‘Cinders lived with her mother and two stepsisters…..
Analysis of differences

- intonational categories
  - major types of pattern of a kind used to make contrasts within a dialect, e.g. a rise vs. a fall

- realisation
  - details of how those categories are produced, e.g. earlier / later fall (alignment)

- utterance-level differences
  - aspects of the overall melody
Intonational categories

- Categories (fall, rise; H*, L*+H) provide the traditional route to describing intonational differences
  - we can try to identify equivalent elements in different dialects, and compare their number, distribution and function.
  - it’s possible to think in terms of ‘systemic’ differences, as when a dialect has more or fewer phonemes than another
Systemic differences

- ...when a dialect has more or fewer phonemes than another
  - Knowles’ (1974) study of Liverpool claims it has two extra ‘nuclear tones’
Systemic differences

...and it’s very likely that Northern Irish English lacks a ‘fall-rise’ but, unlike most dialects, has a ‘rise plateau’:

\[
\begin{align*}
H^* + L & \quad H^\% \\
L^* + H & \quad 0\%
\end{align*}
\]
Dialects, categories, & function

- As we’ve seen, dialects can use a quite different pattern for the same function
  - here, neutral sentence-final termination:
    - ‘…[but everyone] called her Cinders’
Newcastle (1 speaker of 12)

Belfast
Dialects, categories, & function

- Grabe & Post (Speech Prosody 2002) counted different categories for the intonation nucleus (last pitch accent + boundary tone) in several dialects, according to sentence type.

<table>
<thead>
<tr>
<th>Sentence Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>H*+L</td>
<td>0%</td>
</tr>
<tr>
<td>L*+H</td>
<td>0%</td>
</tr>
<tr>
<td>H*+L</td>
<td>H%</td>
</tr>
<tr>
<td>L*+H</td>
<td>H%</td>
</tr>
<tr>
<td>L*+H</td>
<td>L%</td>
</tr>
</tbody>
</table>
Realisation of categories

- Description in terms of categories alone will fail to capture much of the distinctiveness of a dialect’s prosody.
- Other factors could be broadly termed ‘realisational’. Examples follow:
  - ‘truncation’ vs. ‘compression’
  - the ‘shape’ of pitch accents
Truncation vs. compression

Languages, and dialects, differ in how they deal with complex tonal sequences when the phonetic material is short.

- e.g. English vs. Hungarian (Ladd 2008)
Truncation vs. compression

- Grabe, Post, Nolan & Farrar (2000, *JPhon*) as part of the IViE project compared four English varieties
  - 6 male, 6 female speakers for each
  - read materials varying the amount of voiced material available for the ‘nucleus’
‘Anna and Peter were having dinner. Peter said: who do you think I met in the market today?’

Mr \{ Shift, Sheaf, Sheafer \}, Anna replied. asked?
Analysis

- A test was carried out to check that the name was in a separate IP
  - so the rise or fall wasn’t free to be completed on the tag
- Rate of fall was calculated
  - faster with shorter material implies compression
- Excursion was calculated
  - found to be greater for the disyllabic name, but not distinct for the monosyllables
Newcastle

dur. not sig. diff

\{ Shift \\
Sheaf \\
Sheafer \}
Leeds

Shift
Sheaf
Sheafer
Results

- See table below

  note that the failure of Leeds to compress may be related to the relatively shallow fall seen in ‘Cinders’ – there is no requirement for the sharp ‘RP’ fall.

<table>
<thead>
<tr>
<th></th>
<th>RISE</th>
<th>FALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSB</td>
<td>compresses</td>
<td>compresses</td>
</tr>
<tr>
<td>Newcastle</td>
<td>compresses</td>
<td>compresses</td>
</tr>
<tr>
<td>German</td>
<td>compresses</td>
<td>truncates</td>
</tr>
<tr>
<td>Leeds</td>
<td>truncates</td>
<td>truncates</td>
</tr>
<tr>
<td>Belfast</td>
<td>truncates</td>
<td>–</td>
</tr>
</tbody>
</table>
Conclusions: trunc. & compr.

- Dialects (and languages) appear to be able choose whether they compress or not.
- Compression is almost certainly a gradient phonetic matter (rather than the deletion of a tone).
Pitch accent realisation

- Work at Cambridge looked at the shape of the pitch accent ‘gesture’ associated with an H*
  - phrase-initial accent in several dialects
  - initial and final accents in Fife Scottish vs. Cambridge
Fife Scottish

- Margit Aufterbeck
  - ‘Scottish English intonation: a phonetic analysis of a Fife dialect’
  - (PhD 2003, University of Cambridge)
WHERE is the nearest AIR port
Pitch accent shape

- Fife accent gestures characterised by
  - ‘scoop’ (perceptible rise in accented vowel)
  - later peak
  - non-attainment of low afterwards

- Next slide tries to summarise complex findings, spontaneous speech, for:
  - middle-aged Fife women
  - Cambridge girls
Fife: summary

- Auferbeck (p.89): Fife accents are ‘up sharply, down gradually’
- SBE - the main feature of nuclear falls: ‘down sharply’
- Characterising the realisation of the accent gesture fully is complex
  - but crucial to the ‘flavour’ of dialects
Realisation or category?

- Ultimately the distinction between these isn’t watertight.
- For instance, how far can we let a peak ‘lag’ after a stressed syllable while still regarding the stressed syllable as H*?
Summary:

- intonation is richly differentiated in dialects by differences in both these
- which a given difference is not self-evident from the signal, but depends on a phonological analysis
  - just as we cannot tell when we find a ‘clear’ and ‘dark’ [l]s in a language whether these are allophones or phonemes, prior to phonological analysis
Utterance-level differences

- Some differences in dialect prosody seem to be global rather than specifically related to categories or their realisation.
- One such area could be broadly termed ‘pitch range’.
Pitch range

- A challenging area because
  - it straddles the linguistic and non-linguistic sides of intonation
  - it is very sensitive to external factors as well as being under volitional manipulation
- Nonetheless it is intuitively the case that languages and dialects are characterised by what might be termed the ‘cadence’ of the voice
Pitch range: dialect differences?

- Impressionistic observation of a difference in ‘downtrend’ in Dublin
  - Dublin
  - Leeds
- Dublin ‘starts high’??
- Pilot experiment using IViE corpus (one sentence from read ‘Cinderella’ story)
'Lily & Rosa...': steps acc1->acc2, acc2->acc3

p = 0.011
Pitch range: conclusion

- On the basis of a pilot study there seems to be a difference of ‘local downtrend’
  - It appears that Leeds males are the odd ones out, lacking the large first step
  - There may be an interaction between a dialect feature and gender
- The feature needs to be tested on more data, and more ‘naturalistic’ data
Dialect intonation: conclusion

- Many factors contribute to the intonation which characterises a dialect
  - Though some can be described in terms of categories, many are at the level of detailed phonetic realisation
  - New methods are succeeding in capturing the latter, previously neglected
  - But we’re a long way from explaining the differences w.r.t. general properties
Daunting complexity?

- If you’re already familiar with the rich intonational system of RP or GenAm
  - you may be dismayed to hear that the complexity can multiplied by $N$
    - where $N$ is the number of significant dialects

- But don’t despair:
  - intonational variety is *good* news for the L2 teacher and learner
Daunting complexity?

- The fact of native variation means
  - native speakers are tolerant of variety
  - can adapt to novel deviations from ‘norms’
  - do not place heavy reliance on intonation for intelligibility

- My point here is similar to that of J. Windsor Lewis (1995):
…[W]riters in the British EFL field have written about the most general kinds of usages of the south of England without so much as a sidelong glance at the other mother-tongue English speech communities.

The departures from these usages to be heard from the vast majority of EFL users are relatively slight, rarely if ever causing breakdown of communication.

The often strikingly different intonational usages of a great many Irish and Scottish people are far more removed from the Anglo-American mainstream than most EFL departures.

And yet who would claim that Irish or Scottish pitch patterns in themselves have any serious effect on comprehensibility?

Realistic goals

- For most learners, then, full active command of the rich intonational system of English need not be a goal
  - except for those in spy school
  - anyway, being recognisably not a native speaker is a huge advantage for a foreigner

- Rather, L2 learners need clear priorities in their prosodic acquisition
Prosodic priorities

- I would suggest the following order of priorities for L2 learners
  - word stress placement
  - word stress realisation (incl. vowel reduction)
  - a ‘safe’ default pitch accent / intonation
  - accenting and information structure
  - the intonational inventory and meaning
  - dialectal variation in intonation
Word stress (mis)placement

- Misplacement confuses native speakers
  - ‘he’s eMIgrated to austrALIA’
  - ‘he’s EMigrated to ausTRALia’
- and wrong words may even be accessed
  - ‘an IMportant barRISTer’
    - ‘impotent barista’?
  - ‘an imPORTant BARrister’
Word stress (mis)placement

- ...and as a result, whole phrases might be misheard
  - ‘would you like two vegeTABles’
    - ‘would you like to fetch the tables’?
  - ‘would you like two VEGetables’
- So learning word stress must be a priority
  - it is a nuisance… but essential
Word stress realisation

- **Vowel reduction** on unstressed syllables
  - is an essential feature of native English
  - makes correct placement more vital
  - is crucial to the rhythm of English

- Placing the stress is like getting married
  - you have to forsake all others:

  /fəˈtɔːrəfi/ NOT ‘bet-hedging’ /ʃəʊˈtɔːrəfi:/
‘Safe’ default pitch accent

- Most stressed syllables will receive an intonational pitch-accent
  - these involve pitch salient in the context
  - and the pitch movement / height can be associated with ‘meanings’ of various kinds
  - much of what is taught about intonation and meaning relates to the inventory of accents
  - however, a great deal can be achieved with just one!
The ‘saw-tooth’ pattern

- In the simplest pattern:
  - each stressed syllable is given a boost in pitch

But MELanie’s NEVER been NEAR to QUALifying
I arrived quite late about eleven o’clock.
I arrived quite late about eleven o’clock.
I arrived quite late about eleven o'clock.
What is an ‘unsafe’ pattern?

- An L1 pattern which maps onto an attitudinally marked English pattern
  - for instance, ‘delayed peak’ pitch accents, found in Danish, and in some languages of India and Indian English…
So WHEN are you GOing to FINish the LAST section
Accenting and information

A native speaker will be ‘garden-pathed’ by failure to de-accent

- ‘I offered him LUNCH, but he’d already had LUNCH’
  - on hearing the second ‘lunch’, s/he will assume the first e.g. was ‘breakfast’
- the ‘second mention’ needs to be de-accented
  - or, often, replaced with an unaccented pronoun
- ‘I offered him LUNCH, but he’d already HAD lunch’
Accenting and information

- A native speaker will also be misled if pronouns are inappropriately accented
  - ‘John asked you for money? You should GIVE it to HIM’
  - the accent picks out any alternative referent
  - ‘….You should GIVE it to him’
  - ‘His father overheard John asking you for money? You should GIVE it to HIM’
Accenting and information

- De-accenting is common in (many, though not all) Germanic langs
  - it seems to go with the use of strong prominences to highlight points of high information
  - and may be part of a wider constraint against exact repetition of linguistic material – see David Deterding’s blog

Summary

- In this talk I have
  - drawn your attention to the many kinds of intonational variation in the British Isles
  - argued that this very variation makes for greater tolerance of intonational variety…
  - …unless the L1 pattern coincides with a pattern marking ‘bad attitude’ in English
  - identified prosodic priorities for L2 learning
Conclusion

- So the L2 learner need not learn the formal analysis of intonation? Far from it.
  - learning a model will sensitise the learner to what s/he hears, and produces
  - semi-conscious absorbing, imitating, will be made easier
  - but for most learners, the attempt to acquire intellectually a huge inventory of patterns will not be cost-effective