Article:

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Pitch and the projection of more talk

Gareth Walker
School of English
University of Sheffield
Jessop West
1 Upper Hanover Street
Sheffield
S3 7RA
Email: g.walker@sheffield.ac.uk
Telephone: 0114 2220238

Abstract

This study investigates prototypically 'turn-final' pitch features (fall-to-low) at points of possible turn-completion where the same speaker continues. It is shown that points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation only rarely engender incoming talk. It is shown that such points are frequently accompanied by non-pitch talk-projecting phonetic features, and that the presence of these features may constrain the nature of any incoming talk. The results of the study should serve as caution to researchers with regard to an over-emphasis on intonation when describing and analysing talk-in-interaction. Data are from audio recordings of American English telephone calls.

Introduction

One aim of this article to provide a reminder that there is more to the phonetics of turn-projection, and of talk-in-interaction more generally, than pitch. That reminder takes the form of a report on an empirical study which shows that there is no simple relationship between pitch features and turn-projection, even where a prototypically 'turn-final' pitch feature (a fall-to-low in pitch) occurs at a point of possible turn-completion. A review of how studies in Conversation Analysis (CA)/Interactional Linguistics (IL) normally proceed with regard to the phonetic design of talk will provide a warrant for this reminder.

The speech signal contains information about frequency, duration, intensity and quality (Laver, 1994). Since all of this information is available to participants, a challenge facing researchers analysing talk-in-interaction is how to handle the richness of the acoustic signal. Local, Kelly, and Wells (1986) criticised attempts to deal with discourse phonology for an "overly selective handling of the phonic material" (p. 411). Since then research has demonstrated the relevance of phonetic

features other than pitch to the organisation of talk-in-interaction. For example, Jasperson (2002) describes phonetic aspects of closure cut-off: articulatory closures which may accompany the initiation of same-turn repair. It is shown that closure cut-off may involve glottal or oral closure (or both), conditioned by the phonetic environment in which the cut-off occurs. Plug (2005) agues that variation in the production of the Dutch word 'eigenlijk' (roughly equivalent to English 'actually') can be related to sequential environment: when 'eigenlijk' occurs in turns which address problems arising from the speaker's own talk it tends to be produced at a faster rate and with more dramatic articulatory reduction then when it occurs in turns which address problems arising from the talk of a co-participant. Barth-Weingarten (2012) surveys phonetic forms of 'and' in English including differences in duration, vowel quality and the occurrence of final plosion, and argues that the less phonetically reduced the token is, the greater its semantic-pragmatic and syntactic scope. Ogden (2013) argues that clicks and percussives (such as the noise of the articulators separating) can be used to mark incipient speakership, and in sequence management (e.g in word-searches and in marking the start of a new sequence of talk); clicks are shown to be used in displaying a stance. Szczepek Reed (2014) argues that glottalisation of initial vowels in German turn-constructional units (TCUs) is used to implement new conversational actions whereas linking is used to mark continuation of the actions-in-progress.

These studies emphasise the relevance of features other than pitch to the organisation of talk-in-interaction. However, in dealing only with non-pitch features these studies are not representative of the general trend. Studies in CA/IL dealing in any detail with the phonetic design of talk-in-interaction normally either discuss non-pitch phonetic features alongside pitch features, or they discuss pitch features exclusively. The paragraphs which follow review some of the research which discusses pitch and non-pitch phonetic features. This review will help build up a picture of current research as well as providing further evidence of the importance of features other than pitch to the organisation of talk-in-interaction.

Local and Wootton (1995) show that 'unusual echoes' of adults' turns by an autistic boy are characterised by close segmental matching of his repeat to the adults' versions as well as matching of tempo, rhythm and pitch (contour and height). Local (1996) describes phonetic characteristics of freestanding 'oh' tokens used as a news-receipt. They may have initial glottal stops, may have creaky voice, are variable in their duration, are usually diphthongal and are produced exclusively with falling pitch. Where 'oh' precedes an assessment there may be no dynamic pitch movement on 'oh'; where 'oh' is followed by a partial repeat of prior talk pitch may rise or fall, either on 'oh' or throughout the utterance. Where 'oh' tokens occur in response to a question-elicited informing, these may be produced with falling or rising-falling pitch, they begin with a glottal stop, they are variable in their duration and they may be produced as monophthongs.

Several studies examine ways in which pitch and non-pitch phonetic features mark out relationships between turns and parts of turns. Local (1992) shows that loudness, tempo and pitch features (contour, height) mark out talk as self-interrupting and mark out when the talk preceding the self-interruption is being resumed. It is also shown that speakers can use pitch and loudness matching to indicate resumption and continuation of an earlier contribution. Local (2004) shows that speakers can use 'and

uh(m)' to mark out what follows as connecting back to earlier talk. Phonetic characteristics include initial creaky voice or glottal closure, a full (non-reduced) vowel, audible release of the 'and'-final plosive into the vowel which follows, slow production, and production such that it is not louder than surrounding talk. They are produced with roughly level pitch, approximately half-way up the speaker's pitch range. Couper-Kuhlen (2004) argues that a discontinuity in the timing of talk (e.g. the presence of gaps and/or inbreaths), and/or an extreme change (increase) in pitch and loudness can be used to mark the beginning a new course of activity. G. Walker (2004) shows that grammatically dependent continuations to TCUs (increments) are matched to the host TCU in terms of articulation rate, loudness and pitch (span, height and in many cases, contour). The increment may be similar to the host in terms of articulatory and phonatory characteristics.

Also examining pitch and non-pitch phonetic features, Szczepek Reed (2009) shows that where the caller's first turn in a radio phone-in program is designed as a first pair part, the talk displays a break from that of the presenter. That break may involved a silence between the turns, rhythmic disintegration, and an avoidance of prosodic orientation i.e. the repeating of prosodic characteristics of a co-participant's talk. Where the caller's first turn is designed as a second pair part, continuation of the host's talk is displayed through temporal continuity, rhythmic integration and matching of speech rate, voice quality and pitch register. Working with a corpus of openings to everyday telephone conversations, Kaimaki (2011) finds that phonetic details of the answerer's first turn in the call (T1) are different depending on its structure. Where T1 consists only of a standalone 'hello', it has a long final vowel, diminution (decreasing loudness) over the last syllable, no final oral or glottal closures and rising final pitch ending in the middle of the speaker's range. Where T1 consists of multiple units, there is no diminution over the final syllable, no final oral or glottal closures, and falling or rising final pitch. It is also shown that when produced as a standalone item, 'hello' is noticeably longer with a longer final vowel, wider pitch, a later pitch turning point, and a faster rate of pitch change.

Curl (2005) shows that the phonetic characteristics of repetitions following other-initiated repair depend on whether the trouble source was fitted to what came before it or disjunct. Where the trouble source is fitted talk is repeated with increased loudness, longer duration, changed articulatory settings and wider pitch range; where the trouble source is disjunct talk is repeated with decreased loudness, shorter duration, no changes to articulatory settings, and without widening the pitch range. Ogden (2006) shows that speakers can upgrade a second assessment relative to a first in order to convey strong agreement. They can do this by speaking more slowly with closer and tenser articulations. Weak or downgraded agreement can be marked phonetically by speaking more quickly with articulations which are more open. Upgraded second assessments have higher pitch, a wider pitch span, and greater pitch movement on accented items; weak or downgraded second assessments have a narrower pitch span and a lack of dynamic pitch movement. Wright (2011a, 2011b) examine the occurrence of clicks in talk-in-interaction and argues that, along with other articulatory characteristics, voice quality and pitch features, clicks serve to demarcate the onset of a new sequence. The talk preceding the click routinely ends with complete closure which is held until after the click, and the talk following the click is produced with glottalisation. The talk preceding the click is typically produced low in the speaker's range, with narrow pitch span; the talk following the

click routinely begins much higher.

This brief and selective survey makes it clear that pitch features can work in combination with non-pitch features in the organisation of talk-in-interaction. This research would seem to provide plenty of motivation for researchers to routinely consider all aspects of the speech signal. However, there seems to be a general analytic emphasis on pitch features in CA/IL research. This emphasis is discussed in the next section.

The emphasis on pitch

Since one aim of this paper is to caution researchers against the analytic emphasis on pitch features, this section discusses that emphasis in some detail.

Generally speaking, pitch enjoys a privileged status among students of conversation. It seems that pitch is a go-to feature that researchers will readily study and describe even when they will not study other aspects of the speech signal in detail. One area of research where analytic emphasis is often (though by no means always) placed on pitch is in the study of turn-taking. It is not difficult to find studies which prioritise pitch, often to the exclusion of all other phonetic features. Schaffer (1983) investigates relationships between intonation contour and turn-taking based on experimental stimuli constructed from naturalistic conversation. Listening tests were used to try to determine which aspects of intonation function as cues to turn-completion. Intonation was characterised by a suite of measures of fundamental frequency, or F0. (Pitch is the perceptual correlate of F0.) De Ruiter, Mitterer, and Enfield (2006) also study turn-projection in Dutch. (Throughout this article the term turn-projection will be used to refer to a speaker's act of indicating that a change of speakership – transition from one turn to a next, or turn-transition – may legitimately occur; talk-projection will be used to refer to a speaker's act of indicating that he/she will produce more talk.) To study intonation they flattened out the pitch of some of their stimuli. No other phonetic parameters were manipulated, other than the use of low-pass filtering in some conditions to obscure the words being produced (see Local & Walker, 2012, for a critique of this study and its emphasis on pitch characteristics; for a rebuttal of their claim that intonation contour is not necessary for accurate end-of-turn projection, see Bögels & Torreira, 2015).

In a study of naturalistic Dutch speech, Caspers (2003) identified interpausal units in map-task dialogues on the basis of a silence of more than 100 ms. Pitch accents and boundary tones, determined by considering pitch features alone, were then studied. In an investigation into the relationships between syntax, pausing and intonation, Wennerstrom and Siegel (2003) identify potential intonation boundaries by the presence of lengthening and then categorise those boundaries based on pitch features, supported by checking fundamental frequency measures. Szczepek Reed (2004) also sets out 6 pitch contours found in turn-final position based on auditory and acoustic analysis of fundamental frequency.

When researchers focus exclusively on pitch features it is not always clear whether this is because they only take pitch features to be important (and, if so, whether that is for empirical or theoretical reasons), or because they have only considered pitch features in their analysis. For example, Sicoli, Stivers, Enfield, and Levinson (2015)

examine pitch features at the beginning of questions. They motivate the study of pitch in terms of previous research which shows some of the work which pitch can do. However, they give no indication of why they looked exclusively at pitch features, nor do they provide any indication that study of other phonetic features would in their view be warranted. An exclusive focus on pitch, especially when that exclusive focus is not justified, seems to reflect and reinforce the privileged status pitch enjoys as an object of study.

This privileged status pitch enjoys is also evident in familiar locutions such as 'final', 'terminal' and 'continuing intonation'. These terms are encountered frequently in ad hoc comments in the research literature. (A critique of how these terms are used in the literature is provided by T. Walker, 2014.) As well as appearing within analysis of particular excerpts and phenomena, the terms also often appear in notation conventions. For example, Clift (2001) says that "the period indicates a falling, or final intonation contour" (p. 249); Costello and Roberts (2001) describe the symbol as indicating "[f]alling, final intonation as at the end of a sentence" (p. 260). Chevalier and Clift (2008) say that "[a] full stop indicates terminal intonation" (p. 1248). Atkinson and Heritage (1984), among others, say that "[a] comma indicates a continuing intonation" (p. xi). The relevance of other phonetic features to talk- and turn-projection are not indicated in this way even where the relationship is well established. For example, lengthening of sounds has a dedicated symbolisation (a colon, or colons, placed after another character) and has been shown to be relevant to turn-projection (see below). However, the colon is described and used in a way which is agnostic with regard to its relevance to turn-projection in all the notation conventions cited here. Terms such as 'final', 'terminal' and 'continuing intonation' seem to reflect a perception of pitch as especially important to turn- and talk-projection.

So far this section has provided some evidence in support of the view that pitch enjoys a privileged status among students of conversation. The remainder of this section summarises some of the insights which have been gained into the relevance of phonetic features other than pitch to turn- and talk-projection. This summary emphasises the need to consider both pitch and non-pitch features when dealing with talk-in-interaction.

Some research describes the role of non-pitch features alongside pitch features in managing turn- and talk-projection. For example, Local et al. (1986) argued that in Tyneside English a cluster of phonetic features are attendant on turn-endings: slowing down, a loudness 'swell', centralised vowel qualities, and either a pitch step-up at the end of the turn or a drop in pitch. B. Wells and Peppé (1996) also describe a cluster of phonetic features which occur where there is smooth transition between speakers in Ulster English: a loudness 'swell', lengthening, slowing down, a cessation of talk (pause), and final rising pitch. Local and Walker (2005) argue that when standalone 'so' (i.e. 'so' set off from preceding and following talk by silence) is produced quieter and lower in pitch than the same speaker's preceding talk and without final glottal closure, then it may engender turn-transition (trailoff-'so') whereas when it is produced louder and higher in pitch than the preceding talk and with final glottal closure, then it may not (holding-'so').

Barth-Weingarten (2009) argues that a possibly complete unit of talk can project the

production of a next unit to complete what are referred to as parallel-opposition constructions. Relevant features of the first unit of the construction include particular kinds of prosodic focus, final pitch movements, and lack of lengthening of final sounds. In an experimental study of raters' responses to human and synthetic stimuli in Swedish, Hjalmarsson (2011) reported that several phonetic features were relevant to decisions as to whether an utterance would hold or yield the turn. These features included intonation (falling vs. flat pitch), final lengthening (presence vs. absence), and other speech production phenomena (e.g. audible expiration vs. inhalation, presence vs. absence of lip smacks). Also studying turn-taking in Swedish, Zellers (2013) reports that duration and pitch contour features influence raters' decisions as to whether utterances will perform a turn-holding or turn-yielding function: longer duration and higher final pitch peaks were associated with turn-holding.

Some research describes the role of non-pitch features in managing turn- and talk-projection without detailed consideration of pitch features. For example, Local and Kelly (1986) distinguish holding silences from trail-off silences; the former are characterised by glottal closure which is held through the silence and released into the word which follows, the latter by centralised vowel quality before the silence, decrease in loudness, slowing down, audible outbreathing and an absence of glottal closure. Holding silences allow the speaker to continue whereas turn exchange may occur after the trail-off silences. Local and Kelly are quite specific that the two types of silence are not characterisable by the pitch features of the talk preceding them (pp. 195–6). Ogden (2001) argues that creak phonation at the end of a TCU in Finnish has a turn-yielding function (cf. TCU-final glottal stops which have a turn-holding function). Local and Walker (2012) identify sets of talk-projecting and turn-projecting phonetic features. They argue that articulatory and phonatory quality and duration are relevant factors in the design and treatment of talk as talk- or turn-projective: turn-projecting phonetic features included release of plosives at the point of possible turn-completion, and the occurrence of audible outbreaths; talk-projecting phonetic features include avoidance of durational lengthening, reduction of consonants and vowels, articulatory anticipation of talk beyond the point of possible turn-completion and continuation of voicing into the talk following the point of possible turn-completion.

Previous research demonstrates the relevance of pitch and non-pitch phonetic features to turn-taking. Nevertheless, there is a general analytic emphasis placed on pitch features by some researchers. This is especially surprising given that even research focussing on pitch serves as caution for such an emphasis. For instance, one finding reported by Schaffer (1983) was that "falling F0. . . is not an unambiguous indication of turn ends" (p. 251). Results reported by Caspers (2003) were similarly inconclusive with regard to the relationship between pitch and turn-taking: "[t]he data do not present obvious melodic turn-yielding cues: there are no melodic configurations that are typically associated with giving the turn to the other party" (p. 270). Fox (2001) tried to determine whether accented syllables which project upcoming turn-completion are phonetically distinct from those accented syllables which do not. While F0 was quantified in various different ways, the only hypothesis concerning prominence which was strongly supported by the data was that last accents in a turn would have longer durations than non-last ones. On the basis of responses of raters in an experiment investigating turn-taking, Zellers (2016) suggests that duration may be the primary cue to turn transition in Swedish, rather than pitch.

Summary

Generally speaking, pitch enjoys a privileged status among students of conversation. This status is reflected in ad hoc comments, notation conventions and the methodology employed in some investigations. The analytic privilege generally given to pitch in the study of turn-projection does not seem to be warranted by the findings of previous research. Nevertheless, the continued emphasis on pitch features suggests the need for a reminder that there is more to the phonetics of turn-projection, and of talk-in-interaction more generally, than pitch. That reminder takes the form of a report on an empirical study identifying points of possible turn-completion accompanied by a fall-to-low in pitch and followed by same-speaker continuation, and subjecting them to sequential and phonetic analysis. It is shown that even where a prototypically 'turn-final' pitch feature occurs at a point of possible turn-completion, there is no simple relationship between pitch features and turn-projection.

For some these outcomes may not be surprising. It has already been made clear that this is not the first time the argument has been put forward that there is no simple relationship between pitch features and turn-projection. For those who do not find these outcomes surprising, this is another study showing this to be the case. For those unfamiliar with this argument, or unwilling to fully accept its implications, this study should serve as a demonstration of the need for caution with regard to the selective handling of what can be heard in talk-in-interaction.

Data, methods and transcriptions

Data are from the Callhome American English Speech corpus (Canavan, Graff, & George, 1997) which is available via http://talkbank.org/CABank/. The corpus consists of unscripted telephone conversations, mostly between family members or friends. The recordings are generally of a high quality and allow for reliable auditory and acoustic analysis. Analysis focuses on the transcribed portion of 12 calls in the corpus. Calls were selected to balance equal numbers of male and female callers and call-receivers. Callers of different ages were selected, from various geographical locations. These steps were taken to account for the possibility that patterns might be affected by speaker background: Clopper and Smiljanic (2011), for example, show effects of regional variety and gender on phrase-final intonation; work on 'high rising terminals' shows one effect of age on phrase-final intonation (see Levon, 2016, for a review of work in this area). The calls selected are shown in Table 1. The table also gives the age of each caller as well as the US state abbreviation for where the caller grew up; this information is not available for the call-receiver.

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TABLE 1 ABOUT HERE
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Points were identified in the caller's talk which, on the basis of syntactic structure and action, might legitimately engender turn-transition (i.e. be responded to with more than a continuer or receipt), and which were followed by more talk from the caller. The first 20 such points in the transcribed talk were identified by the author. This

yielded a total of 240 points of possible turn-completion followed by same-speaker continuation. The transcriptions supplied with the corpus show that an average of 55 s of labelled material (174 words) are produced by the caller between the start of the transcribed talk and the twentieth point of possible turn-completion followed by same-speaker continuation.

As a post hoc check of the criteria and coding, after the analysis was complete the same combined decisions about turn-completion and same-speaker continuation were made by a researcher with extensive experience in CA, including research on turn-taking. (This researcher will be referred to as the "second researcher" in this discussion.) There was substantial agreement as to whether or not each word represented a point of possible turn-completion followed by same-speaker continuation (Landis & Koch, 1977): Cohen's kappa, $\kappa = 0.655$, proportion of observed total agreement, $p_o = 0.921$, proportion of positive agreement, $p_{pos} = 0.7$, proportion of negative agreement, $p_{neg} = 0.956$ (Cicchetti & Feinstein, 1990; Feinstein & Cicchetti, 1990).[1]

The 240 points of possible turn-completion followed by same-speaker continuation were then examined to find whether or not the point of possible turn-completion exhibited final falling pitch, ending low in the speaker's pitch range. Such a 'fall-to-low' is regarded across a range of research traditions as a prototypical way to end an utterance in English (e.g. Cruttenden, 1997, 2014; Jones, 1962; Kingdon, 1958; O'Connor & Arnold, 1961; Ward, 1945; J. C. Wells, 2006). Final falling pitch is shown to contribute to the status of talk as transition-relevant in studies of the organisation of interaction (e.g. Duncan, 1972; Ford & Thompson, 1996; Local et al., 1986; Szczepek Reed, 2004; Wennerstrom & Siegel, 2003; Wichmann, 2015). For the purposes of this study, to be considered a fall-to-low (i) there must be a fall in pitch from the maximum pitch of the last accented syllable before the point of possible turn-completion, and (ii) the fall must end within the bottom 10% of the speaker's normal speaking range. (Note that there is no claim about the interactional relevance of these precise features and measures: they are intended to serve as a heuristic device for the identification of a set of utterances with prototypically 'turn-final' pitch.) Pitch ranges were established from the first minute of labelled material by the speaker in the supplied transcription. Pitch traces were created using Praat (Boersma & Weenink, 2016). All pitch traces were inspected visually and auditorily, comparing the playback of the synthesised pitch with the original audio. Unreliable measures (e.g. due to changes in phonation type and other errors) were either corrected within Praat's constraints on pitch editing, or they were removed.

Thirty-four points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation were coded by both researchers. The second researcher independently coded 29 of these as points of possible turn-completion and same-speaker continuation ($p_o = 0.853$). There is therefore substantial agreement over transition relevance in the data-set as a whole, as well as of those points with an acoustically determined fall-to-low in pitch. All examples presented in this article which were coded by the second researcher were independently coded as points of possible turn-completion.

Transcriptions of excerpts follow the basic transcription conventions in the GAT 2 system of notation (Selting et al., 2011). Moderate modifications to standard

orthography are used to represent aspects of pronunciation. The main conventions are summarised at the end of this article. The caller is always identified as A and the call-receiver as B. The header to each excerpt identifies the call the excerpt can be found in, which of the 20 identified points of possible turn-completion is being presented, and where the excerpt can be found in the recording.

Results

This section provides exemplification of what occurs after points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation in these data. A quantitative overview is also provided.

Exemplification

Excerpts (1)-(5) exemplify the sequential organisations found in the data. Figure 1 provides acoustic records of the final word (which in each case includes the final accent) before the point of possible turn-completion in each excerpt, up to the end of the first word of the continuation. Word labels are provided at the top of each subfigure. A spectrogram is shown in the top panel. The middle panel shows a pitch trace in semitones (ST) with the bottom and top corresponding to the speaker's normal speaking range. A waveform is shown in the bottom panel. Some of the most relevant features of these acoustic records are highlighted, though the features are not necessarily identified in all acoustic records where they are evident.

Excerpts (1)-(3) contain points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation where that point of possible turn-completion does not engender incoming talk. In (1) B has asked A about his progress in his college classes.

(1)   4521:20, 3:02-3:06; immediate continuation, no incoming

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    1   A:    i got my second TEST. i did GOOD⊙ =i got a ninety SEVen
                                   2.4,1.3
    2         on this one.
    3         (0.2)
    4   B:    EXcelle[nt.
    5   A:           [MM_hm-
```

Speaker A responds that he "did good" in his latest test, ending with a fall-to-low. This is news which might have occasioned a response from B, such as preliminary congratulations, a newsmark or news receipt (Maynard, 1997). There is no response at this point and A continues immediately into further talk about his success.

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FIGURE 1 ABOUT HERE
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In (2) A has been telling B about a recent trip to Texas, including a visit to a museum about John F. Kennedy.

(2)   4686:20, 2:41-2:48; silence, continuation, no incoming

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1   A:    [(but) yeh]
2   B:    [ did (.) ] they go through the theories of the three BULLets,
3         (or/and) the magic ONE bullet,
4   A:    YEA:H. (.) FOUR <<creaky>bull>. YEAH☉ (0.9) it was² INtresting.
                                            4.8,2.5
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Speaker B asks A about whether coverage was given to the various theories concerning what exactly happened around the time Kennedy was assassinated. In the course of his response, Speaker A produces a confirmatory "yeah" with a fall-to-low. A shift in speakership could have occurred at this point. For example, B could have produced more talk on the various theories about the shooting, or asked A for his opinion on them. There is no change in speakership and after a silence A continues with "it was interesting". In (3), B is complying with a request from A, who is overseas, to tell her about recent news events in the United States.

(3)   4247:6, 3:10-3:27; inbreath, continuation, no incoming

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1   A:    clinton just came out and sai:d that he:: (0.2) doesn't believe °h
2         (0.2) in quota systems °h (0.2) and (.) in reverse
3         discriminAtion.=but that he does believe that affirmative action
4         is NECessary☉ °h to mo:ve uh:² (.) you know black americans
              2.7,1.4
5         °h forward and to give them the opportunities that they've been
6         deNIED.
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Speaker A describes the views of President Bill Clinton on affirmative action (the policy of favouring members of groups which are, or have been, discriminated against). A shift in speakership could have occurred after A's "he does believe that affirmative action is necessary" which ends with a fall-to-low. For example, A could have expressed surprise that such an announcement had been made (or, conversely, a lack of surprise at it), or offered her own view. There is no change in speakership, A breathes in audibly, and then continues with more detail about the announcement.

Excerpts (1)-(3) contain points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation. The continuation may happen immediately, after a silence, or after an audible inbreath. Those points of possible turn-completion do not engender incoming talk from a co-participant. In a small number of cases a point of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation does engender incoming talk. Examples are shown in (4)-(5). In each case an arrow identifies the line in the transcription containing the relevant incoming. In (4), A has been responding to B's enquiry about his father's health. Speaker B has said that his father will be cutting down his salt intake. This prompts A to initiate repair.

(4)   4521:11, 2:30-2:35; immediate continuation, incoming

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    1   B:    i thought that was SUGar:.
    2         (1.6)
    3   A:    OH yes. SORRy. SUgar⊙ =tha[t's RIGHT.
                            7.2,2.1
    4 → B:                                [YEAH.
    5         (2.0)
    6   B:    yeh=you gotta watch the SU[Gar.
    7   A:                              [mm_hm
```

Following A's confirmation that he had got things wrong he confirms that the problem is with sugar, producing the word with a fall-to-low. Speaker A goes on to produce more talk without delay. Just after A's production of "sugar", and before he reaches the end of "that's" (so well before the next point of possible turn-completion), B produces "yeah". In (5), B has been telling A about a word processor she has received.

(5)   4838:6, 6:38-6:43; silence, continuation, incoming

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    1   B:    it's just like (.) it's an anTIQUE computer.
    2   A:    uh RIGHT⊙ (.) [Okay that's cool.]
              5.7,2.0
    3 → B:                  [ the games on it ] are like (NOEL)
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Speaker B equates the word processor with "an antique computer". A responds to this comparison with "right" which is accompanied by a fall-to-low. After a short but audible silence A continues. At the same time as this continuation, B starts up her own talk.

Quantitative overview

The sequential organisations in which fall-to-low occurs at points of possible turn-completion followed by same-speaker continuation in these data are summarised in Table 2. The table also shows how many instances of each sequential organisation were identified.

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TABLE 2 ABOUT HERE
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The picture is not substantially different if only cases independently identified as points of possible turn-completion and same-speaker continuation by the second researcher involved in post hoc verification are considered. Of the 47 cases without incoming talk, 30 were coded by both researchers; 25 of these were independently coded by the second researcher as points of possible turn-completion and same speaker continuation (13 cases of immediate continuation, 10 after a silence and 2 after an inbreath). All continuations after incoming talk were independently coded by the second researcher as points of possible turn-completion and same speaker continuation.

Fall-to-low accompanies at least one of the selected points of possible turn-completion followed by same-speaker continuation in all but one of the calls (5872).

This suggests that age, gender and geographical origin of the speaker is not a major factor in whether or not a fall-to-low can occur before same-speaker continuation.

Discussion

This section discusses several observations and issues which arise from the results presented in the previous section.

Basic observations

Two basic observations emerge from the results presented in the previous section. First, fall-to-low at a point of possible turn-completion may be followed by same-speaker continuation. Of 240 points of possible turn-completion followed by same-speaker continuation, 51 (21.2%) are accompanied by fall-to-low. While it is not possible to know from these data how frequently speakers stop talking after fall-to-low, it is possible to say that same-speaker continuation after fall-to-low is not infrequent: more than one-fifth of cases of same-speaker continuation follow points of possible turn-completion accompanied by a fall-to-low. Second, fall-to-low at a point of possible turn-completion followed by same-speaker continuation does not routinely engender incoming talk. Of the points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation, only 4 (7.8%) engender incoming talk.

These observations are significant because if fall-to-low at a point of possible turn-completion provides a clear indication of turn-projection, then we would expect to frequently observe a co-participant starting to talk. This is not what we observe: points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation only rarely engender incoming talk.

Since these results are at odds with the pervasive view of fall-to-low as a strong indication of turn-projection, how can we begin to account for them?

Continuation when a co-participant does not self-select

One possible explanation for same-speaker continuation following a point of possible turn-completion accompanied by fall-to-low is simply that the co-participant chooses not to come in, so the current speaker self-selects and continues. This sequential possibility is provided for by the model of turn-taking set out by Sacks, Schegloff, and Jefferson (1974). Such self-selection would simultaneously account for both the same-speaker continuation and the general lack of incoming talk. If same-speaker continuation always, or usually, came about in this way then we would expect silence to often intervene between the fall-to-low and the continuation as the current speaker waits to see if a co-participant is going to start to talk. Where a silence intervenes between the fall-to-low and the continuation, it seems likely that the co-participant is deciding not to self-select. However, such a silence is not a frequent occurrence: in almost two-thirds of the cases of same-speaker continuation after fall-to-low at a point of possible turn-completion without any incoming talk, the continuation is immediate (30/47, 63.8%).

Where there is no audible response to a point of possible completion followed by same-speaker continuation it is generally difficult to tell whether or not this is because of a decision by the co-participant not to self-select. Excerpt (6) shows that a point of possible turn-completion accompanied by fall-to-low may occur without engendering incoming talk, even where a co-participant is looking for a point to begin their talk. The speakers are friends in separate countries who are talking about travelling separately and meeting up in Morocco.

```
(6)   6071:7, 5:15-5:32

   1    A:    shit i'd probably get like raped and killed and drawn and
   2          quartered=they're probably going to sell me into white SLAvery on
   3          the wa:y. °h [you know] they DO that⊙ in mo<<laughter>ro>cco
                                              9.3,2.8
   4    B:                    [  °h   ]
   5          (0.3)
   6    A:    °h
   7    B:    ((click)) oh <<creaky>yeah> but it's I mean it's² ih² (.) I mean
   8          °h peopu² i've been to colombia before I went to colombia I'm like
   9          °h they're going to skin me alive and it was this REAlly civil
  10          place.
```

B produces an audible inbreath (line 4), what Schegloff calls a 'turn-pre-beginning' (Schegloff, 2000, p. 15; Schegloff, 1996, pp. 92-3). The inbreath in line 4 is produced in an auspicious location for turn-transition: at a point of possible syntactic and pragmatic completion in A's talk. This is an audible indication that B has talk to offer. It is noticeably abrupt in auditory quality (it is short and relatively loud) and more abrupt than other inbreaths which do not serve this purpose (e.g. his mid-turn inbreath in line 8 is longer and less loud). On finding himself in overlap with A's "you know" (line 3), B holds off. It is to be expected that B will start up at the next possible opportunity. In terms of syntax and action, that opportunity is at the end of "they do that". Given the turn-pre-beginning at line 4 there is every reason to expect B would come in at that point. If fall-to-low provides a strong indication of turn-projection then there is all the more reason to expect that B will come in at that point. However, B does not come in: A continues and B comes in later.

There is evidence suggesting that same-speaker continuation beyond a fall-to-low at a point of possible turn-completion cannot always be the result of the current speaker self-selecting when a co-participant has shown no interest in self-selecting: the continuation is often immediate, and it may follow an audible indication by a co-participant that they have talk to offer.

Talk-projecting phonetic features

Another reason a co-participant might not start up talk at a point of possible turn-completion is that other design features of the talk work against such an incoming. Specialised resources involving phonetic features are available to do this e.g. the rush-through (G. Walker, 2010) and pivot constructions (Clayman & Raymond, 2015; G. Walker, 2007). Local and Walker (2012) explore some more widespread talk-projecting phonetic features. Each point of possible turn-completion in the current data-set was scrutinised for the presence of talk-projecting features they identify. In accordance with an established research tradition analysing phonetics and talk-in-

interaction, the presence of talk-projecting phonetic features was determined on the basis of combined auditory and computer-based acoustic analysis. Avoidance of durational lengthening was determined by considering the duration of final words auditorily against talk up to that point, as well as by comparing duration measures against comparators in turn-final and turn-medial position where possible. Articulatory anticipation was determined auditorily in combination with inspection of spectral information (primarily via wide-band spectrograms). Continued voicing (vocal fold vibration) was determined auditorily in combination with inspection of waveforms for continued (quasi-)periodicity and spectrograms for striations corresponding to vibrations of the vocal folds. Reduction of consonants and vowels was determined auditorily in combination with inspection of spectral information, comparing against expected citation forms.

There were 13 instances of avoidance of durational lengthening, 6 instances of articulatory anticipation of the talk following the point of possible turn-completion (1 with incoming talk), 7 instances of reduction of consonant and vowel articulations leading up to the point of possible turn-completion, and 13 instances of voicing continuing from the talk leading up to the point of possible turn-completion into the talk which follows (1 with incoming talk).

Table 3 shows how often points of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation are also accompanied by talk-projecting phonetic features. It can be seen that almost half of the instances (25/51, 49%) are accompanied by at least one talk-projecting phonetic feature.

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TABLE 3 ABOUT HERE
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Silence between the point of possible turn-completion and the continuation could be taken as evidence that in those cases the co-participant is choosing not to come in. Silence intervenes between the point of possible turn-completion and the continuation in 15 cases. It can therefore be said that talk-projecting features accompany more than two-thirds of cases (25/36, 69%) where a co-participant may be actively looking to start up talk.

This means that while it is certainly not necessary for talk-projecting phonetic features to accompany a fall-to-low at point of possible turn-completion in order for the speaker to continue, talk-projecting phonetic features often co-occur with fall-to-low when there is same-speaker continuation. The presence of talk-projecting phonetic features in roughly half of all cases may also help explain why so few cases engender incoming talk: while the talk leading up to the point of possible turn-completion is accompanied by prototypically 'turn-final' pitch features, there are other phonetic features which project more talk.

Excerpt (6) gives an example of talk-projecting phonetic features providing for same-speaker continuation. It was shown in that case that the current speaker (A) was able to continue past a point of possible turn-completion accompanied by fall-to-low even though her co-participant (B) had already indicated that he had talk to offer. Since the point of possible turn-completion is accompanied by prototypically 'turn-final' pitch

features, any talk-projection work must be being handled by some other phonetic feature(s). The end of "they do that" is accompanied by one of the identified talk-projecting phonetic features. A spectrogram and waveform of a relevant portion is shown in Figure 2a.

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FIGURE 2 ABOUT HERE
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Voicing can be heard to continue from "that" which leads up to the point of possible turn-completion, into the following word "in": the final sound is produced as a voiced tap. Voicing here is notable as the final sound in "that" is phonologically voiceless so, all else being equal, voicing would be expected to cease. Continuing voicing in this way is indicates that A has more to say at this point. Moreover, her co-participant treats her talk as projecting more, withholding from the production of talk at this point of possible turn-completion despite having previously indicated that he has something to say with his turn-pre-beginning inbreath.

Figure 2b shows a spectrogram and waveform of the same speaker's talk later in the same call. As part of her turn she produces "I'm like a dog in heat" which ends at a point of possible turn-completion and is accompanied by a fall-to-low. She continues with "I'm like" which, as in the continuation in (6), starts with a vowel. Unlike in (6), voicing does not continue from the point of possible turn-completion into the talk which follows: voicing can be heard to cease. This is reflected in Figure 2b. When the closure for the final sound in "heat" is formed, periodicity in the waveform and striations in the spectrogram corresponding to voicing cease. There is thus a break in voicing in this case whereas there was no such break between the point of possible turn-completion and the same-speaker continuation in (6). This means that the continuation of voicing in (6) is not happenstance and does not arise automatically from the production of inter-vocalic /t/ at a point of possible turn-completion when the speaker goes on to say more.

In summary, talk-projecting phonetic features occur in more than two-thirds of cases where there is no silence between the point of possible completion accompanied by fall-to-low and the same-speaker continuation. This suggests a link between those features and the continuation. A closer look at (6) showed how the continuation of voicing provided for same-speaker continuation in that case. The claim that non-pitch phonetic features can project more talk is compatible with claims in the literature about the relevance of intonation phrase (IP) boundaries to turn- and talk-projection. Experimental work has shown that the presence or absence of IP boundaries are important factors in raters' judgments as to whether talk is transition-relevant or not (Bögels & Torreira, 2015). The presence of talk-projecting phonetic features set out by Local and Walker (2012) might lead to a conclusion that there is no IP boundary, depending on the criteria used in their identification (i.e. whether those criteria include non-pitch features). For example, final lengthening is often considered a signal of an IP boundary, so an avoidance of lengthening might be taken as a signal that there is no such boundary. It is therefore perhaps unsurprising that when talk-projecting phonetic features occur at points of possible turn-completion, these points do not generally engender incoming talk. Fall-to-low is a prototypical way to end an IP, yet when it occurs at a point of possible turn-completion it can be followed by

more talk from the same speaker. It is noteworthy that talk-projecting phonetic features can assist in that continuation.

Incoming talk after fall-to-low

Only very rarely do co-participants start up their own talk following a point of possible turn-completion accompanied by fall-to-low and followed by same-speaker continuation. There are 4 cases, of which 2 exhibit talk-projecting phonetic features and 2 do not. This suggests that talk-projecting phonetic features do not prevent a co-participant starting up talk. However, where talk-projecting phonetic features accompany a fall-to-low at a point of possible turn-completion, the incoming talk seems to be constrained: in both cases where incoming talk follows a point of possible turn-completion accompanied by fall-to-low and talk-projecting phonetic features, the incoming talk is restricted to a brief acknowledgement token. One case was shown in line 4 of (4). As can be seen from Figure 1d, in that case voicing (vocal fold vibration) continues from the talk ending with the fall-to-low ("sugar") into the talk which follows ("that's") with sustained loudness. The incoming talk is restricted to "yeah".

The other case of a point of possible completion accompanied by fall-to-low accompanied and a talk-projecting phonetic feature which engenders incoming talk is shown in (7). Speaker B is subletting an apartment to another tenant, and she is unhappy with her landlord's actions in trying to terminate their contract. She has said that this has left her feeling "a little bit depressed".

```
(7)    4595:3, 1:14-1:20

    1   A:    i can underSTAND that⊙ i [ca i c]an unders:
                         4.5,3.4
    2 → B:                               [YEAH: ]
    3   A:    uh cos that makes you feel like [you're maki]ng: a [choice]
    4   B:                                     [ it's like ]       [ (uh) ]
```

As a display of solidarity with B, A says "I can understand that" i.e. that she understands why B has felt unsettled by the situation with her landlord. Voicing does not quite continue from "that" into the same-speaker continuation (see Figure 3a). The join of "that" and "I" is glottalised. The articulatory quality of the glottalised portion anticipates the production of the vowel which follows. There is an increase in the frequency of the first formant (F1) on the glottal pulse after the release of the oral occlusion at the end of "that": the articulators are getting further apart, which they need to do for the vowel which follows. This change in articulatory quality projects the production of more talk: note that the increase in F1 on that glottal pulse is continued into the talk which follows. As in (4), in (7) the incoming talk engendered by the point of possible completion accompanied by fall-to-low and a talk-projecting phonetic feature is restricted to brief acknowledgement ("yeah").

====================
FIGURE 3 ABOUT HERE
====================

There are 2 cases of incoming talk after a point of possible turn-completion accompanied by a fall-to-low which do not exhibit talk-projecting phonetic features.

The incoming talk does not seem to be constrained in the same way as when talk-projecting phonetic features are present. One case was shown in (5). As shown in Figure 1e, voicing ceases at the end of "right" before starting up again for "okay" (cf. the continuation of voicing in a comparable phonological context in (6)/Figure 2a), and there is no articulatory anticipation of what is to come (cf. (7)/Figure 3a). In (5) B starts up talk at the same time as A continues. Unlike (4) and (7) where the incoming talk was restricted to a brief acknowledgement token, in (5) B produces a complete turn-constructional unit ("the games on it are like (noel)") undisturbed by A's continuation ("okay that's cool").

Excerpt (8) shows the other case of incoming talk after a point of possible turn-completion accompanied by fall-to-low without talk-projecting phonetic features. Speaker B is expecting his children to return after an extended stay in another state. They have been talking about how the children made their outward journey, which involved B taking them only part of the way.

(8)   4431:1, 0:43-0:49

```
1    B:    and her mom and dad (.) drove down there and GOT [em.
2    A:                                                      [got em?
3    A:    °h [so how] are they getting BACK☉
                                        5.3,1.0
4    B:       [ yeah ]
5    A:    dri[ving them b
6 → B:       [tay?
7          (.)
8    B:    driving them back
```

Speaker A brings her talk to a point of possible turn-completion: "so how are they getting back". There is rising-falling pitch on "back" ending low in the speaker's range: see Figure 3b. "Back" ends with audible aspiration which Local and Walker (2012) identify as a turn-projecting phonetic feature. There is no evidence of any talk-projecting phonetic features. Just after A begins to produce a candidate answer to her own question ("driving them b"), B starts up talk ("tay-"). This talk is aborted when B finds himself in overlap with A, though enough is produced to presume that this is a start on "taking them" (or similar e.g. "taking them back"): this would fit the sequence up to that point and would be compatible with the candidate answer A produces and which B repeats ("driving them back"). Although B does not bring his incoming talk to completion, it is clear that this is a start on something more substantial than a brief acknowledgement token.

In summary, in these data incoming talk after points of possible completion accompanied by fall-to-low are restricted to brief, minimal responses where that point is accompanied by talk-projecting phonetic features. Crucially, there seems to be no such restriction where there are no talk-projecting phonetic features.

Conclusions

This study has shown that points of possible turn-completion accompanied by prototypically 'turn-final' pitch features (fall-to-low) may be followed by same-speaker continuation. Only rarely does a point of possible turn-completion

accompanied by fall-to-low and followed by same-speaker continuation engender incoming talk from a co-participant. In approximately half of the identified cases, points of possible turn-completion accompanied by fall-to-low are also accompanied by talk-projecting phonetic features.

There are areas for further exploration. This article focussed on fall-to-low due to the strength of researchers' intuitions and expectations about it, and because it is reasonably straightforward to establish acoustic criteria to delimit cases of it. It would be interesting to see whether other prototypically 'turn-final' pitch features (e.g. a rise to high in the speaker's range) generate the same results. The talk-projecting phonetic features considered here were those set out by Local and Walker (2012). It may be possible to specify even more precisely what these features involve, from the point of view of phonetic design and their function in interaction.

The results of this study question the validity of assumptions about one kind of prototypical 'turn-final' pitch. The results show that there is no simple relationship between the occurrence of prototypically 'turn-final' pitch features and turn-transition. Speakers often continue at those points and, where they do, co-participants only very rarely start up their talk. This should caution researchers against making simplistic assumptions about the relevance of pitch features to turn- and talk-projection. More than one fifth of the points of possible turn-completion followed by same-speaker continuation are accompanied by fall-to-low. This finding alone would seem to be sufficient reason to avoid terms such as 'final' and 'terminal' intonation in favour of descriptive terminology which deals with form rather than function (see also T. Walker, 2014). Of course, it has long been recognised by some that there is more to turn-projection than pitch. Nevertheless, pitch features generally enjoy a privileged analytic status including in the study of turn-taking.

The results of this study should serve as caution over selectivity in the phonetic analysis of talk-in-interaction more generally. There are important reasons to be cautious about giving analytic privilege to pitch features. Focussing on pitch (or any other features, for that matter) is at odds with the general methodological principle that "no order of detail in conversational interaction can be dismissed a priori as disorderly, accidental, or interactionally irrelevant" (Heritage, 1989, p. 22). An inclusive approach to analysis considering the interactional relevance of as many phonetic details as possible is thus not only commensurate with CA, but required by its principles. Another reason to avoid an emphasis on pitch features is the nature of the speech signal. Speech is not a simple combination of lexical items and pitch features. As well as frequency, the speech signal contains information about duration, intensity and articulatory and phonatory quality. Participants use all of this information in managing their interactions.

It is not the contention of this article that pitch features do not merit attention from students of conversation, either for their relevance to turn-taking or the organisation of talk-in-interaction more generally: pitch features are plainly implicated in both. The contention of this article is rather that researchers should avoid simplistic assumptions about pitch features and the functions they may perform. They should not be given analytic privilege just because they are 'there' and apparently readily observable, describable and (nowadays) measurable, but considered alongside other features. If researchers do choose to look only at pitch features then there is a need to

be clear about exactly why those features are being examined and not others. For some, looking elsewhere in the speech signal may prove difficult at first. However, doing so will lead to a deeper understanding of how the phonetic design of talk figures in the organisation of talk-in-interaction and the accomplishment of action.

Acknowledgements

Transcription conventions

Adapted from GAT 2 (Selting et al., 2011):

`(.)`	silence of less than 0.1 s
`(1.4)`	measured silence in seconds
`:`	lengthening of preceding sound
`°h`	audible inbreath of less than 0.5 s
`ACcent`	focal accent in phrase
`[ ]`	talk produced in overlap
`( )`	doubt over what was said
`(and/or)`	alternative hearings of what was said
`?`	glottal cut-off
`=`	fast, immediate continuation (latching)
`<<laughter> >`	laughter, indicating scope
`<<creaky> >`	creak phonation, indicating scope

Phrase-final pitch movements:

`?`	rise-to-high
`,`	rise-to-mid
`–`	level
`.`	fall-to-low

Special conventions:

⊙	follows the fall-to-low at a point of possible completion of particular importance in each excerpt
`accent`	final accent before ⊙; italics are combined with upper case where the last accent is the focal accent
`3.2,1.2`	placed beneath the relevant portion of the transcription to indicate the size of the fall-to-low and how far above the bottom of the speaker's range the fall ends, both in semitones

References

Atkinson, J. M. & Heritage, J. (1984). Transcript notation. In J. M. Atkinson & J. Heritage (Eds.), *Structures of social action: studies in conversation analysis* (pp. ix–xvi). Cambridge: Cambridge University Press.

Barth-Weingarten, D. (2009). Contrasting and turn transition: prosodic projection with parallel-opposition constructions. *Journal of Pragmatics*, 41(11), 2271–2294. doi:10.1016/j.pragma.2009.03.007

Barth-Weingarten, D. (2012). Of *ens* 'n' *ands*: observations on the phonetic make-up of a coordinator and its uses in talk-in-interaction. *Language and Speech*, 55(1), 35–56. doi:10.1177/0023830911428868

Boersma, P. & Weenink, D. (2016). Praat: doing phonetics by computer [Computer program]. Retrieved from http://www.praat.org/

Bögels, S. & Torreira, F. (2015). Listeners use intonational phrase boundaries to project turn ends in spoken interaction. *Journal of Phonetics*, 52, 46–57. doi:10.1016/j.wocn.2015.04.004

Canavan, A., Graff, D., & George, Z. (1997). CALLHOME American English Speech LDC97S42. DVD. Philadelphia, PA: Linguistic Data Consortium. doi:10.21415/T5KP54

Caspers, J. (2003). Local speech melody as a limiting factor in the turn-taking system in Dutch. *Journal of Phonetics*, 31, 251–276. doi:10.1016/S0095-4470(03)00007-X

Chevalier, F. H. & Clift, R. (2008). Unfinished turns in French conversation: projectability, syntax and action. *Journal of Pragmatics*, 40(10), 1731–1752. doi:10.1016/j.pragma.2007.12.007

Cicchetti, D. V. & Feinstein, A. R. (1990). High agreement but low kappa: ii. resolving the paradoxes. *Journal of Clinical Epidemiology*, 43(6), 551–558. doi:http://dx.doi.org/10.1016/0895-4356(90)90159-M

Clayman, S. E. & Raymond, C. W. (2015). Modular pivots: a resource for extending turns at talk. *Research on Language and Social Interaction*, 48(4), 388–405. doi:10.1080/08351813.2015.1090112

Clift, R. (2001). Meaning in interaction: the case of *actually*. *Language*, 77(2), 245–291. doi:10.1353/lan.2001.0074

Clopper, C. G. & Smiljanic, R. (2011). Effects of gender and regional dialect on prosodic patterns in American English. *Journal of Phonetics*, 39(2), 237–245. doi:http://dx.doi.org/10.1016/j.wocn.2011.02.006

Costello, B. A. & Roberts, F. (2001). Medical recommendations as joint social practice. *Health Communication*, 13(3), 241–260. doi:10.1207/S15327027HC1303_2

Couper-Kuhlen, E. (2004). Prosody and sequence organization in English conversation. In E. Couper-Kuhlen & C. E. Ford (Eds.), *Sound patterns in interaction* (pp. 335–376). Amsterdam: John Benjamins.

Cruttenden, A. (1997). *Intonation* (2nd ed.). Cambridge: Cambridge University Press.

Cruttenden, A. (2014). *Gimson's pronunciation of English* (8th ed.). Abingdon: Routledge.

Curl, T. S. (2005). Practices in other-initiated repair resolution: the phonetic differentiation of 'repetitions'. *Discourse Processes*, 35(1), 1–43. doi:10.1207/s15326950dp3901_1

de Ruiter, J. P., Mitterer, H., & Enfield, N. J. (2006). Projecting the end of a speaker's turn: a cognitive cornerstone of conversation. *Language*, 82(3), 515–535. doi:10.1353/lan.2006.0130

Duncan, S. (1972). Some signals and rules for taking speaking turns in conversations.

Journal of Personality and Social Psychology, 23(2), 283–292. doi:10.1037/h0033031

Feinstein, A. R. & Cicchetti, D. V. (1990). High agreement but low kappa: i. the problems of two paradoxes. *Journal of Clinical Epidemiology*, 43(6), 543–549. doi:http://dx.doi.org/10.1016/0895-4356(90)90158-L

Ford, C. E. & Thompson, S. A. (1996). Interactional units in conversation: syntactic, intonational, and pragmatic resources for the management of turns. In E. Ochs, E. A. Schegloff, & S. A. Thompson (Eds.), *Interaction and grammar* (pp. 134–184). Cambridge: Cambridge University Press.

Fox, B. A. (2001). An exploration of prosody and turn projection in English conversation. In M. Selting & E. Couper-Kuhlen (Eds.), Studies in interactional linguistics (pp. 287–315). Amsterdam: John Benjamins.

Heritage, J. (1989). Current developments in conversation analysis. In D. Roger & P. Bull (Eds.), *Conversation: an interdisciplinary perspective* (pp. 21–47). Clevedon: Multilingual Matters.

Hjalmarsson, A. (2011). The additive effect of turn-taking cues in human and synthetic voice. *Speech Communication*, 53(1), 23–35.

Jasperson, R. (2002). Some linguistic aspects of closure cut-off. In C. E. Ford, B. A. Fox, & S. A. Thompson (Eds.), *The language of turn and sequence* (pp. 257–286). New York: Oxford University Press.

Jones, D. (1962). *An outline of English phonetics* (9th ed.). First published 1918. Cambridge: Heffer.

Kaimaki, M. (2011). Transition relevance and the phonetic design of English call openings. *Journal of Pragmatics*, 43(8), 2130–2147. doi:10.1016/j.pragma.2011.01.008

Kingdon, R. (1958). *The groundwork of English intonation*. London: Longmans.

Landis, J. R. & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159–174. doi:http://dx.doi.org/10.2307/2529310

Laver, J. (1994). *Principles of phonetics*. Cambridge: Cambridge University Press.

Levon, E. (2016). Gender, interaction and intonational variation: the discourse functions of High Rising Terminals in London. *Journal of Sociolinguistics*, 20(2), 133–163. doi:10.1111/josl.12182

Local, J. (1992). Continuing and restarting. In P. Auer & A. di Luzio (Eds.), *The contextualization of language* (pp. 273–296). Amsterdam: John Benjamins.

Local, J. (1996). Some aspects of news receipts in everyday conversation. In E. Couper-Kuhlen & M. Selting (Eds.), *Prosody in conversation: interactional studies* (pp. 177–230). Cambridge: Cambridge University Press.

Local, J. (2004). Getting back to prior talk: *And-uh(m)* as a back-connecting device. In E. Couper-Kuhlen & C. E. Ford (Eds.), *Sound patterns in interaction* (pp. 377–400). Amsterdam: John Benjamins.

Local, J. & Kelly, J. (1986). Projection and 'silences': notes on phonetic and conversational structure. *Human Studies*, 9, 185–204. doi:10.1007/bf00148126

Local, J., Kelly, J., & Wells, B. (1986). Towards a phonology of conversation: turn-taking in Tyneside English. *Journal of Linguistics*, 22(2), 411–437. doi:10.1017/s0022226700010859

Local, J. & Walker, G. (2005). Methodological imperatives for investigating the phonetic organisation and phonological structures of spontaneous speech. *Phonetica*, 62(2-4), 120–130. doi:10.1159/000090093

Local, J. & Walker, G. (2012). How phonetic features project more talk. *Journal of*

the International Phonetic Association, 42(3), 255–280.
doi:10.1017/s0025100312000187

Local, J. & Wootton, A. J. (1995). Interactional and phonetic aspects of immediate echolalia in autism: a case study. *Clinical Linguistics & Phonetics*, 9(2), 155–194. doi:10.3109/02699209508985330

Maynard, D. W. (1997). The news delivery sequence: bad news and good news in conversational interaction. *Research on Language and Social Interaction*, 30(2), 93–130. doi:10.1207/s15327973rlsi3002_1

O'Connor, J. & Arnold, G. (1961). *Intonation of colloquial English*. London: Longmans.

Ogden, R. (2001). Turn transition, creak and glottal stop in Finnish talk-in-interaction. *Journal of the International Phonetic Association*, 31(1), 139–152. doi:10.1017/s0025100301001116

Ogden, R. (2006). Phonetics and social action in agreements and disagreements. *Journal of Pragmatics*, 38(10), 1752–1775. doi:10.1016/j.pragma.2005.04.011

Ogden, R. (2013). Clicks and percussives in English conversation. *Journal of the International Phonetic Association*, 43(3), 299–320. doi:10.1017/s0025100313000224

Plug, L. (2005). From words to actions: the phonetics of *eigenlijk* in two communicative contexts. *Phonetic*a, 62(2-4), 131–145. doi:http://dx.doi.org/10.1159/000090094

Sacks, H., Schegloff, E. A., & Jefferson, G. (1974). A simplest systematics for the organization of turn-taking for conversation. *Language*, 50(4), 696–735. doi:doi.org/10.1353/lan.1974.0010

Schaffer, D. (1983). The role of intonation as a cue to turn taking in conversation. *Journal of Phonetics*, 11(3), 243–257.

Schegloff, E. A. (1996). Turn organization: one intersection of grammar and interaction. In E. Ochs, E. A. Schegloff, & S. A. Thompson (Eds*.), Interaction and grammar* (pp. 52–133). Cambridge: Cambridge University Press.

Schegloff, E. A. (2000). Overlapping talk and the organization of turn-taking for conversation. *Language in Society*, 29(1), 1–63. doi:10.1017/s0047404500001019

Selting, M., Auer, P., Barth-Weingarten, D., Bergmann, J., Bergmann, P., Birkner, K., … Uhmann, S. (2011). A system for transcribing talk-in-interaction: GAT 2. Gesprächsforschung – Online-Zeitschrift zur verbalen Interaktion, 12, 1–51. Translated and adapted for English by Elizabeth Couper-Kuhlen and Dagmar Barth-Weingarten. Retrieved from www.gespraechsforschung-ozs.de

Sicoli, M. A., Stivers, T., Enfield, N. J., & Levinson, S. C. (2015). Marked initial pitch in questions signals marked communicative function. *Language and Speech*, 58(2), 204–223. doi:10.1177/0023830914529247

Szczepek Reed, B. (2004). Turn final intonation in English. In E. Couper-Kuhlen & C. E. Ford (Eds.), *Sound patterns in interaction* (pp. 97–117). Amsterdam: John Benjamins.

Szczepek Reed, B. (2009). Prosodic orientation: a practice for sequence organization in broadcast telephone openings. *Journal of Pragmatics*, 41(6), 1223–1247. doi:10.1016/j.pragma.2008.08.009

Szczepek Reed, B. (2014). Phonetic practices for action formation: glottalization versus linking of TCU-initial vowels in German. *Journal of Pragmatics*, 62(1), 13–29. doi:10.1016/j.pragma.2013.12.001

Walker, G. (2004). On some interactional and phonetic properties of increments to

turns in talk-in-interaction. In E. Couper-Kuhlen & C. E. Ford (Eds.), *Sound patterns in interaction* (pp. 147–169). Amsterdam: John Benjamins.

Walker, G. (2007). On the design and use of pivots in everyday English conversation. *Journal of Pragmatics*, 39(12), 2217–2243. doi:10.1016/j.pragma.2006.10.002

Walker, G. (2010). The phonetic constitution of a turn-holding practice: rush-throughs in English talk-in-interaction. In D. Barth-Weingarten, E. Reber, & M. Selting (Eds.), *Prosody in interaction* (pp. 51–72). Amsterdam: John Benjamins.

Walker, T. (2014). Form ≠ function: the independence of prosody and action. *Research on Language and Social Interaction*, 47(1), 1–16. doi:10.1080/08351813.2014.871792

Ward, I. C. (1945). *The phonetics of English* (4th ed.). Cambridge: Heffer and Sons.

Wells, B. & Peppé, S. (1996). Ending up in Ulster: prosody and turn-taking in English dialects. In E. Couper-Kuhlen & M. Selting (Eds.), *Prosody in conversation: interactional studies* (pp. 101–130). Cambridge: Cambridge University Press.

Wells, J. C. (2006). *English intonation: an introduction*. Cambridge: Cambridge University Press.

Wennerstrom, A. & Siegel, A. F. (2003). Keeping the floor in multiparty conversations: intonation, syntax, and pause. *Discourse Processes*, 36(2), 77–107. doi:10.1207/s15326950dp3602_1

Wichmann, A. (2015). Functions of intonation in discourse. In M. Reed & J. Levis (Eds.), *Handbook of English pronunciation* (pp. 175–189). Oxford: Wiley-Blackwell.

Wright, M. (2011a). On clicks in English talk-in-interaction. *Journal of the International Phonetic Association*, 41(2), 207–229. doi:10.1017/s0025100311000144

Wright, M. (2011b). The phonetics-interaction interface in the initiation of closings in everyday English telephone calls. *Journal of Pragmatics*, 43(4), 1080–1099. doi:10.1016/j.pragma.2010.09.004

Zellers, M. (2013). Pitch and lengthening as cues to turn transition in Swedish. In F. Bimbot, C. Cerisara, C. Fougeron, G. Gravier, L. Lamel, F. Pellegrino, & P. Perrier (Eds.), *Proceedings of the 14th annual conference of the International Speech Communication Association* (Interspeech 2013) (pp. 248–252). Lyon, France.

Zellers, M. (2016). Prosodic variation and segmental reduction and their roles in cuing turn transition in Swedish. *Language and Speech*. doi:10.1177/0023830916658680

gender (caller-called)	call	age	state	call	age	state	call	age	state
M-M	4521	19	NY	4801	27	WA	4686	30	FL
M-F	5872	29	CA	4247	43	varied	4184	54	NY
F-F	4838	18	NY	4844	25	OH	4595	33	NY
F-M	6071	35	FL	4065	36	MD	4431	36	IL

Table 1: Calls selected for analysis, and caller details

	n
continuation with no incoming	47
where there is:	
immediate continuation	30
silence, possibly with inbreath before, continuation	14
inbreath, continuation	3
continuation with incoming	4
where there is:	
immediate continuation	3
silence, continuation	1
total	51

Table 2: Occurrence of fall-to-low at points of possible turn-completion followed by same-speaker continuation, by sequential organisation

|	n
continuation with no incoming	23
where there is:	
immediate continuation	22
inbreath, continuation	1
continuation with incoming	2
where there is:	
immediate continuation	2
total	25

Table 3: Co-occurrence of talk-projecting phonetic features with fall-to-low at points of possible turn-completion followed by same-speaker continuation, by sequential organisation
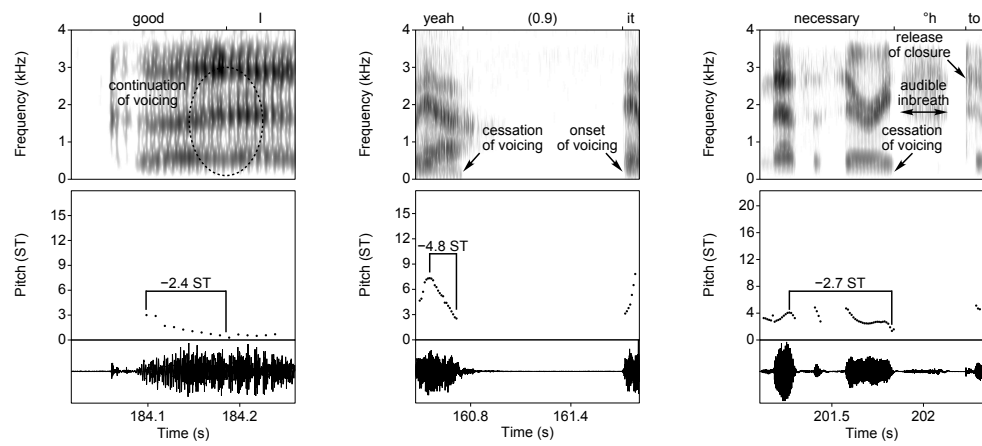
(a) Excerpt (1)   (b) Excerpt (2)   (c) Excerpt (3)
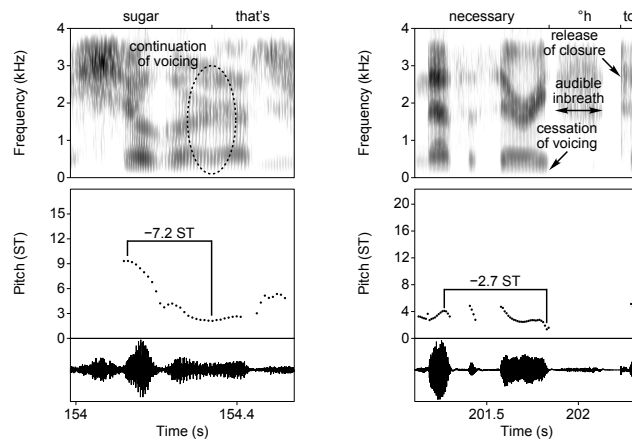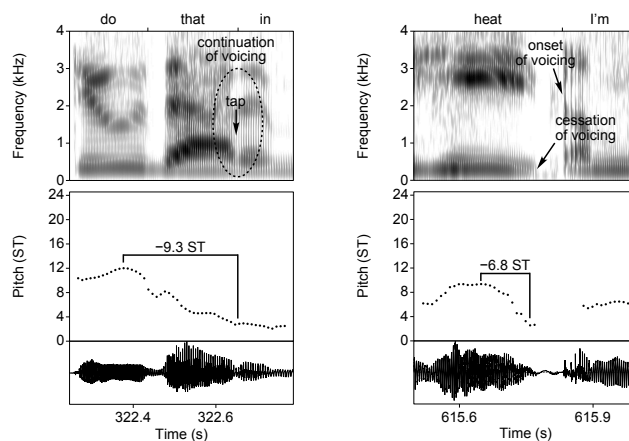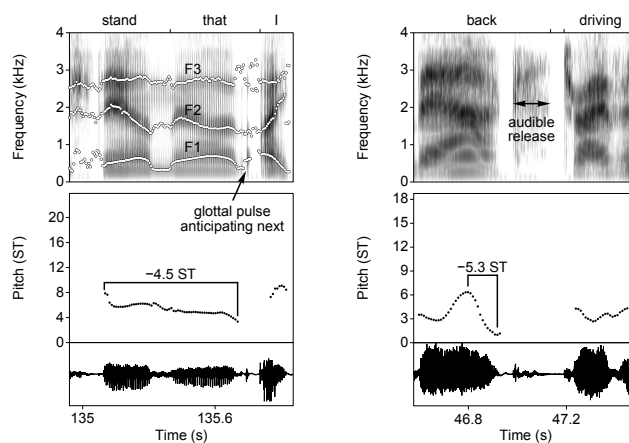

(d) Excerpt (4)   (e) Excerpt (5)

Figure 1: Spectrogram (top), pitch trace (middle) and waveform (bottom) of the end of talk before a point of possible turn-completion accompanied by fall-to-low and the first word of the continuation after it

(a) Excerpt (6)   (b) "heat…I'm" by
                         speaker A from (6)

Figure 2: Spectrogram (top), pitch trace (middle) and waveform (bottom) of the end of talk before a point of possible turn-completion accompanied by fall-to-low and the first word of the continuation after it

(a) Excerpt (7)   (b) Excerpt (8)

Figure 3: Spectrogram (top), pitch trace (middle) and waveform (bottom) of the end of talk before a point of possible turn-completion accompanied by fall-to-low and the first word of the continuation after it

Footnotes

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[1] The number of decisions made (1590) was estimated on the basis of the number of words in the transcriptions supplied with the Callhome corpus, stopping after the first word marked as the twentieth point of possible turn-completion followed by same-speaker continuation by either researcher in each call.