A NOTE ON INTONATIONAL TYPOLOGY

Anthony FOX

Abstract

This paper examines some evidence for a claim that the intonation systems of English and German differ typologically, the former being a 'compressing' language, the latter a 'truncating' language. It is shown that the evidence for this claim is unconvincing, since the two languages do not differ significantly in respect of this particular parameter. Furthermore, the basis for the claim is shown to be insecure, since the forms compared are not equivalent. The paper concludes with some general reflections on the status of typological parameters in intonation.

1. Introduction

Intonation is a linguistic universal: all languages appear to have it, though its form and function will inevitably differ from case to case. Discussions of intonational universals (Bolinger 1964, 1978, 1986, 1989; Cruttenden 1981, 1997; Ladd 1981, 1996; Ohala 1983; Vaissière 1983, among others) have attempted to identify specific universal traits both of form (for example, the existence of declination) and of function (for example, the use of falls and rises for statements and questions, respectively). Alongside this interest in shared features, however, some recent attention has been paid to intonational *differences* (Cruttenden 1997: 5.4; Ladd 1996: 4.2; Hirst and Di Cristo (eds.) 1998). The attempt to determine the limits of such differences leads to a concern with the establishment of an intonational *typology*, and an attempt to identify possible parameters of typological differentiation (Fox 1984, 1995; Ladd 1996: Ch. 4).

Apart from the notorious practical difficulties involved in the analysis and comparison of intonation patterns, to which writers on the subject have repeatedly drawn attention, and which include the absence of an agreed mode or model of description, the establishment of a typology of intonation raises theoretical issues relating not merely to the parameters to be used but also to the criteria that are appropriate for identifying them, and, beyond this, to the role and status of any such typology itself. To be of any typological significance, differences must not only be systematic but should also have wider relevance, involving some sort of implicational dependence between related features (Comrie 1981: 35-7). Both traditional and modern typological parameters in linguistics - for example, the older morphological parameter based on word-structure and the more recent syntactic one based on constituent order - have been successful precisely because they have such wider significance, which extends beyond the immediate differences that they identify.

In intonation, there is still a lack of data about the permitted range of inter-language variation, and where descriptions of the intonation of different languages are available it is difficult to relate them to one another because of the differing modes of description adopted.[1] The main 'classical' descriptive frameworks - those of the British school and the American phonemic tradition - are not necessarily suitable as typological frameworks, the former because it imposes a uniformity of structure - specifically, the bipartite division into pre-nuclear and nuclear portions of the pattern - which may obscure precisely those differences that we would wish to investigate, the latter because, by focusing on 'pitch

[1] It is significant that a recent collection of descriptions of the intonation of a variety of languages (Hirst and Di Cristo 1998) does not attempt to impose uniformity of theory or descriptive categories on the different contributions.

phonemes', it imposes virtually no structure, and therefore provides no basis for meaningful comparison. More recently, the Autosegmental-Metrical approach of Pierrehumbert (1980), originally devised for English, has been used as a more general model, and it has been applied to a number of different languages. Indeed, several typological claims have been made based on these applications, one of which is the subject of the present paper. It is doubtful, however, whether this framework is able to provide the combination of sufficient generality (to cover different language types) and sufficient explicitness (to provide criteria for comparison) that a universal typological model demands.

In earlier work on intonational typology (Fox 1995), the intonation of a number of different languages was compared, with the deliberate aim of encompassing a range of prosodically very different languages. The conclusion arrived at there was that a typology of intonational itself is probably not feasible, since intonational differences that are significant enough to be potentially of typological status are precisely those which depend directly on more general prosodic characteristics of the languages concerned, such as whether they are tonal, and the nature of their accentual structure. Any useful typology of intonation would thus be largely a reflection of these broader prosodic differences. Those differences which are internal to intonation, on the other hand, are relatively superficial, and do not justify being elevated to the status of typological parameters.

Nevertheless, some attempts have been made to establish typological groupings for intonation, and a number of claims have been made about the parameters involved. In the present paper, some of the evidence for one of these claims will be examined, not specifically with a view to disproving the claim in question, but rather in order to throw light on the nature of the evidence that would be required to substantiate any claim of this kind.

2. The typological parameter

Ladd (1996: 119) usefully identifies a number of dimensions of intonational variability which might serve as potential typological parameters, as follows:

> 'Semantic' differences: differences in the meaning or use of phonologically identical tunes.
> 'Systemic' differences: differences in the inventory of phonologically distinct tune-types, irrespective of semantic differences.
> 'Realisational' differences: differences of detail in the phonetic realisation of what may be regarded phonologically as the same tune.
> 'Phonotactic' differences: differences in tune-text association and in the permitted structure of tunes.

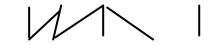
Apart from these general categories, a more specific typological claim is made: that languages can be divided into two types, according to whether they are typically *compressing* or *truncating* with respect to their intonation patterns (Ladd 1996: 132-6). The criterion invoked here derives from studies of the intonation of Swedish and Danish (cf. Erikson and Alstermark 1972; Grønnum 1989, 1991), in which it was found that dialects differ in their treatment of the pitch pattern of syllables containing 'falling' tones with short vowels. In some dialects the fall was found to be executed more rapidly ('compressed') with short vowels; in others it was broken off before reaching a low pitch ('truncated'). This difference can clearly be ascribed to the 'realisational' category of Ladd (1996); it is a phonetic effect of no phonological significance.

Ladd (1996) applies this criterion to differences between English and German, and concludes that they are typologically different in respect of this distinction, English being

typically 'compressing' and German typically 'truncating'. As evidence he adduces examples not of simple falling or rising intonation patterns but of complex pitch movements, (rise-)fall-rise and (fall-)rise-fall, which, it is claimed, are, when applied to short domains of one or two syllables, treated differently in the two languages, being compressed in English and truncated in German.[2] In this form, the dichotomy assumes potentially greater significance, as we shall see.

Taking the complex rise-fall-rise nuclear pattern of English, which may be represented in Autosegmental-Metrical (AM) notation[3] as L* H...L...H%, it can readily be shown that this pattern is independent of the number of syllables involved, so that the same pattern is found, to give Ladd's examples, on the five-syllable utterance *driving instructor!?* (1) and the monosyllabic utterance *Sue!?* (2).

(1) L* H L H%



driving instructor!?

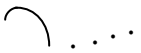
(2) L* H L H%

Sue!?

Thus, it may be claimed that the pattern which is assigned to several syllables in (1) is *compressed* onto a single syllable in (2).

The factual basis of this observation is, of course, not new; *all* major writers on English intonation, from Palmer (1922) onwards, recognise this phenomenon, though the analysis and the notation vary. Armstrong and Ward (1926: 72-3), for example, give the same pattern for the rise-fall-rise on a polysyllabic and a monosyllabic utterance, as in (3) and (4).

(3)



(it isn't the) NOISE I object to

(4)

(it's bitterly) COLD

On this basis, therefore, we may regard English as a language in which patterns are *compressed*.

It might with some justification be objected that there is no reason to regard (1) and (3) as the base form from which (2) and (4) are derived, rather than the reverse, and therefore no basis for the concept of 'compression'. This is certainly arguable in a nuclear tone approach, where we simply recognise a tone which is independent of the number of syllables over which it is realised, but in the AM theory the tripartite form of this pattern

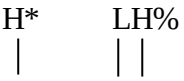
[2] Grabe (1998) investigates the claim with respect to the simple rise and fall of English and German, and is able to confirm a phonetic difference (see below). She does not consider these complex tones, however.

[3] Cf. Ladd (1996: 132). In the form given here, this pattern consists of three parts, a rising 'pitch accent' *L H, a low 'phrase tone', and a high 'boundary tone' H%.

might be said to offer more justification for the idea that the basic form of the pattern is polysyllabic, and the pattern is therefore 'compressed' when it occurs on a single syllable.

According to Ladd, however, not all languages behave in this way. He cites Hungarian and Palermo Italian as languages in which a different strategy is employed: the pattern is *truncated* so as to avoid the accumulation of different tones on the same syllable. He also exemplifies this from German, which, he claims, similarly avoids compression. He argues that, when a typical high-fall-rise pattern (H* L H%) found in utterances such as 'Ist das IHRE Tüte?' (*Is this YOUR bag?*), 'Ist das Ihre TÜTE?' (*Is this your BAG?*), in which the pattern is distributed over four and two syllables, respectively, is applied to utterances where it would be compressed onto a single syllable, for example, 'Ist das Ihr GELD?' (*Is this your MONEY?)*, German prefers to substitute a simple high rise, in AM notation H* H H%. These forms are given in (5), (6), and (7) (Ladd 1996: 133-4).

(5)



Ist das IHRE Tüte?
Is this YOUR bag?

(6)

Ist das Ihre TÜTE?
Is this your BAG?

(7)

Ist das Ihr GELD?
Is this your MONEY?

Ladd is careful to state that the avoidance of compression here is a tendency rather than an absolute restriction, but he suggests that in German the compressed monosyllabic form, given in (8), 'sounds odd phonetically'.

(8)

Ist das Ihr GELD?
Is this your MONEY?

Nevertheless, he uses these examples to support the claim that German is a *truncating* rather than a *compressing* language. In what follows, we shall examine this claim in more detail.

3. Examining the evidence

One problem that must be confronted by any empirical cross-linguistic investigation, whether in search of universals or typological criteria, is that of establishing equivalence between features of different languages (Croft 1990: 4-18). Even if we do not adhere slavishly to strict Saussurean principles, which demand that each language is regarded as an independent system 'où tout se tient' and that comparison of features from different systems

is therefore in principle inadmissible, we must still ensure that, in comparing features cross-linguistically, we are comparing like with like.

In the case of the patterns just discussed, it must be observed that, despite appearances, German does not, in fact, have a pattern which is strictly equivalent to the English (rise-)fall-rise. The (non-)existence of this pattern is one of the chief differences between the intonation systems of the two languages (Fox 1981, 1984). There are certainly fall-rise intonations in German - the examples of (5) and (6) given above are perfectly valid, and they are widely attested in the literature - but they do not exactly correspond, either in form or function, to the English examples of (1) and (2).

The situation is complicated by the fact that English possesses more than one type of fall-rise. The different types have been widely discussed in the 'classical' intonational literature (Lee 1956; Schubiger 1956; Sharp 1958; Halliday 1970). The pitch can fall and rise in various ways within an utterance, and a crucial factor is *where* the falls and rises occur; different possibilities reflect differences of intonational structure. We may eliminate from consideration those cases where the fall and the rise are separate, belonging to different intonation units, and those where the fall occurs in the prenuclear portion of the unit and the rise in the nuclear portion (these are called the 'fall-rise sequence' and the 'fall-rise tune', respectively, by Lee 1956). We are here concerned with what Lee calls the 'fall-rise tone', where the fall and the rise are both contained within the intonational nucleus (+ tail). Even here, however, there is more than one fall-rise pattern, one of which we shall here call the *high* pattern, and the other the *low* pattern. Though not all writers on English intonation have noted this distinction, Halliday (1967, 1970) identifies these two distinct forms, which are assigned to his Tone 2 and Tone 4, respectively; he characterises them as in (9) (Halliday 1970: 20).[4]

(9)

2	4
	
starts and ends high	starts mid, mid-high or mid-low
rise reaches same height as beginning of fall	rise reaches about same height as beginning of fall
no rising approach	rising approach
two distinct movements	one continuous movement
sharp change of direction	smooth change of direction
rise is sudden and begins steeply	rise is gradual and begins gently
even force on rise and fall	main force on fall

These two forms have different uses; the first (high) pattern is typically - though not exclusively - found in questions, and can be consider a 'stronger' form of the simple high rise ('Is he˅COMING?'), while the latter (low) pattern is the 'implicatory' fall-rise ('I ˗THINK so'), and is rare in questions.[5]

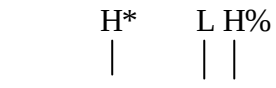
[4] Halliday also compares both of these patterns with the superficially similar 'double tonic' pattern 13, consisting of a fall followed by a low rise. This form is not at issue here and is therefore ignored.

[5] O'Connor and Arnold (1961), who recognise only the low form, give no examples of its use in questions.

German does not possess an equivalent of the English 'low' form, which is the one exemplified in (1) and (2); the German fall-rise resembles much more closely, in both form and use, the English 'high' form. Von Essen (1956: 40) treats the German fall-rise as a variant of the high rise, with a basically interrogative function (e.g. 'Ist die ˇZEITUNG schon da?', 'Ist der ˇBOTE da gewesen?'). This form is certainly not restricted to questions (and neither, of course, is the simple rise); von Essen (p. 54) also gives an example with a command: 'ˇEINSTEIGEN bitte!'. Pheby (1975: 55) correctly notes that this pattern 'nicht immer eine "interrogative" Funktion besitzt' ('does not always have an "interrogative" function'), and gives it independent status; nevertheless, 4 of his 5 examples are questions. Similarly, all but one of the examples given by Féry (1993: 91) are questions, as are Ladd's examples given in (5) and (6), above. In all these respects the German form is clearly parallel to the 'high' form of English, which is similarly analogous in function to the simple high rise.

Let us consider now the behaviour of the English 'high' fall-rise. Assuming the same notation H* L H%, English forms equivalent to (5) and (6) are given in (10) and (11).

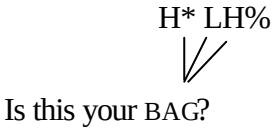
(10)



(11)

The equivalent of (8) - the 'phonetically odd' version of German - is also possible in English; it is given in (12).

(12)



But if the German form 'sounds odd phonetically', then the English form also seems slightly unusual, unlike the 'low' fall-rise of (2), where compression of the various phases of the pattern is perfectly normal and very widespread. The form of (12) is not at all impossible in English - Halliday (1970: 17), in fact, gives two such examples: 'WHY?' and 'Have you seen their new HOUSE?' - but then neither is that of (8) in German. Féry (1993: 91-3), while acknowledging that this form is 'slightly marked', nevertheless gives a German example: 'DU! Hör auf Ernie zu schlagen!' ('YOU! Stop hitting Ernie!'), where 'DU' takes the high fall-rise tone. It appears, therefore, that this form can occur on a single syllable in both languages, though it is somewhat marked in both.

It is clear, therefore, that the comparison between examples (1) and (2) on the one hand, and (5), (6) and (7) on the other, is not a valid one, since the forms involved have a rather different status in the two languages. When we compare the German forms with their counterparts in English, a different pattern emerges; the two languages turn out to be entirely analogous. Thus, based on this evidence, the simple dichotomy between English as a 'compressing' language and German as a 'truncating' language becomes unsustainable; both languages may compress. Furthermore, the idea that German may *truncate* a fall-rise is also

not very convincing. After all, the high fall-rise—where it is recognised at all—is legitimately seen by many writers on both English and German as a marked variant (perhaps a 'stronger' or 'more emphatic' one) of the simple high rise. Hence the substitution of the latter form for the fall-rise can hardly be seen as a matter of 'truncation'; it is merely the use of the unmarked version of this tone.

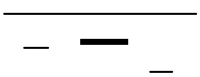
We might nevertheless claim that German has a greater tendency than English to avoid the high fall-rise on a single syllable. Such a claim is entirely conjectural, as statistics on this point are not available, and they would in any case be rather meaningless. Not only does the high fall-rise have a different role in the intonational system of the two languages, since in English there is a wider range of possibilities for non-falling tones, rendering cross-linguistic comparison difficult at this point, but it is impossible to establish whether any given instance of a simple high rise is a 'truncated' fall-rise or merely the occurrence of the unmarked variant. But even if we assume that this claim is valid, we cannot necessarily conclude that 'compression' vs. 'truncation' is the relevant parameter. It is widely observed that, phonetically speaking, the pitch in English utterances tends to *glide*, while in German there is a tendency for it to *jump*. For example, a simple falling pattern, which can be represented in AM terms as H* L,[6] generally has a slightly different realisation in English and German. In an English expression such as 'Good MORNING', the pitch generally falls during 'MOR'; in the equivalent German 'Guten MORGEN', the syllable 'MOR' is likely to be relatively level, with a more rapid fall, or a drop, to the following syllable. Schematically, they can be represented as in (13) (cf. also Delattre 1965: 25; Fox 1984: 14).

(13)

Good MORNING Guten MORGEN

This tendency of German to use a high level pitch and jump down on the following syllable rather than glide on the nuclear syllable itself may well be the source of the observation, discussed and well documented by Grabe (1998), that in syllables with short vowels, simple falling tones in German are 'truncated', in the sense that the pitch fails to reach the bottom of the speaker's range, whereas the equivalent English forms have a full falling pitch. It seems likely that a fall is not a necessary part of the phonetic realisation of this tone in German. This would also provide an explanation for any greater tendency of German to avoid complex pitch movements on one syllable; glides can be compressed more readily than jumps. However, this does not mean that compression vs. truncation is the relevant parameter here, since in both cases the truncation may simply be the phonetic consequence of this general tendency. Furthermore, this tendency is itself not a matter of absolutes; English, too, can use jumps, depending on the style of speech. A form such as (14) is not at all impossible, though it is stylistically marked.

(14)



Good MORNING

4. Conclusion

[6] Along with most other writers, I depart here from the usage of Pierrehumbert (1980) in using H* L as a representation of the simple fall, as this seems the most natural notation. Pierrehumbert uses this pitch-accent type merely as a means of triggering 'downstep'.

Where, then, does this leave the typological parameter compression vs. truncation, especially in so far as it affects German and English? We have, of course, not discussed this parameter as it might apply to other languages, and no claim is made, therefore, that it is in principle invalid. What we have seen is that the simple conclusion that English is a compressing language and German a truncating language cannot be justified on the basis of the examples cited here, since it appears that the form in question - the high fall-rise - is compressible in both languages, while it is difficult to verify the claim that truncation takes place in this form in German, since the 'truncated' form is simply the unmarked variety of this tone, and in any case, such truncation would also be characteristic of English. It is possible, though yet to be demonstrated, that the 'compressed' form of this pattern could be less frequent in German than in English, but if so, it is more likely to be a reflection of a more general phonetic tendency of German for pitch movements to be jumps rather than glides.

Apart from the evaluation of this claim, there are methodological implications here, too, in particular the conclusion that, in establishing systematic differences between the intonational features of different languages, we must ensure that we compare like with like. In the present case it is evident that the fall-rise forms used to demonstrate the 'compressing' nature of English are not equivalent to those used to demonstrate the supposed 'truncating' nature of German. The English counterpart of the latter - the 'high' fall-rise - in fact behaves in a parallel fashion to its German counterpart, and in both it has a close affinity with the simple high rise, while the former - the 'low' fall-rise - has no such affinity, and could not, therefore, be 'truncated' to it.

Wider questions are also raised which relate to the establishment of typological parameters of intonation in general. It is undeniably the case that there are differences between the intonation systems of English and German, one of which is, as we have noted, the existence of more than one fall-rise pattern in the former, and another is the preference for glides in the former and for jumps in the latter. What is less certain is that any of these differences can legitimately be seen as having typological status. Are the 'systemic' intonational differences that we have identified here any more significant typologically than the fact that German has a velar fricative while English does not, and are the 'realisational' intonational differences - such as the 'compression' vs. 'truncation' of simple rises and falls, discussed by Grabe (1998) - of any more importance for typological purposes than the fact that English tends to velarise its syllable-final laterals while German does not? As noted earlier, in order to establish typological parameters it is not sufficient merely to register differences; these differences must have wider implications. There is no evidence, in the present case at least, that this is so.

References

Armstrong, L. and Ward, I.C. (1926). *A Handbook of English Intonation.* Cambridge: Heffer.

Bolinger, D.L. (1964). Intonation as a universal. In Lunt, H. (ed.) *Proceedings of the Ninth International Congress of Linguists.* The Hague: Mouton. pp. 833-844.

Bolinger, D.L. (1978). Intonation across languages. In Greenberg, J. (ed.) *Universals of Human Language*, Vol. II. Palo Alto, Ca: Stanford University Press. pp. 471-524.

Bolinger, D.L. (1986). *Intonation and its Parts.* Palo Alto, Ca: Stanford University Press.

Bolinger, D.L. (1989. *Intonation and its Uses.* Palo Alto, Ca: Stanford University Press.

Comrie, B. (1981). *Language Universals and Linguistic Typology.* Oxford: Blackwell.

Croft, W. (1990). *Typology and Universals*. Cambridge: Cambridge University Press.

Cruttenden, A. (1981). Falls and rises: meanings and universals. *Journal of Linguistics* **17**. 77-91.
Cruttenden, A. (1997). *Intonation* (2nd ed.). Cambridge: Cambridge University Press.
Delattre, P. (1965). *Comparing the Phonetic Features of English, French, German and Spanish: An Interim Report.* Heidelberg: Gross.
Erikson, Y. and Alstermark, M. (1972). Fundamental frequency correlates of the grave word accent in Swedish: the effect of vowel duration. *Quarterly Progress and Status Report* **2-3,** Speech Transmission Laboratory, Royal Institute of Technology, Stockholm. 53-60.
von Essen, O. (1956). *Grundzüge der Hochdeutschen Satzintonation.* Ratingen: Henn.
Féry, C. (1993). *German Intonational Patterns.* Tübingen: Niemeyer.
Fox, A. (1981). Fall-rise intonations in German and English. In Russ, C.V.J. (ed.), *Contrastive Aspects of English and German*. Heidelberg: Gross. pp. 55-72.
Fox, A. (1984). *German Intonation: an Outline.* Oxford: Clarendon Press.
Fox, A. (1995). Principles of intonational typology. In Lewis, J.W. (ed.), *Studies in General and English Phonetics. Essays in Honour of Professor J. D. O'Connor*. London: Routledge. pp. 187-210.
Grabe, E. (1998). Pitch accent realization in English and German. *Journal of Phonetics* **26**. 129-143.
Grønnum, N. (1989). Stress group patterns, sentence accents and sentence intonation in Southern Jutland (Sønderborg and Tønder) - with a view to German. *Annual Report of the Institute of Phonetics, University of Copenhagen* **23**.1-35.
Grønnum, N. (1991). Prosodic parameters in a variety of regional Danish standard languages, with a view towards Swedish and German. *Phonetica* **47**. 188-214.
Halliday, M.A.K. (1967). *Intonation and Grammar in British English.* The Hague: Mouton.
Halliday, M.A.K. (1970). *A Course in Spoken English: Intonation.* London: Oxford University Press.
Hirst, D. and Di Cristo, A. (eds.)(1998). *Intonation Systems. A Survey of Twenty Languages.* Cambridge: Cambridge University Press.
Ladd, D.R. (1981). On intonational universals. In Myers, T., Laver, J. and Anderson, J. (eds.) *The Cognitive Representation of Speech*. Amsterdam: North Holland. pp. 389-97.
Ladd, D.R. (1996). *Intonational Phonology*. Cambridge: Cambridge University Press.
Lee, W. R. (1956). Fall-rise intonation in English. *English Studies* **37**. 62-72.
Ohala, J.J. (1983). Cross-language use of pitch - an ethological view. *Phonetica* **40**. 1-18.
O'Connor, J.D. and Arnold, G.F. (1961). *Intonation of Colloquial English.* London: Longmans.
Palmer, H.E. (1922). *English Intonation with Systematic Exercises*. Cambridge: Heffer.
Pheby, J. (1975). *Intonation und Grammatik im Deutschen.* Berlin: Akademie.
Pierrehumbert, J.E. (1980). *The Phonology and Phonetics of English Intonation.* PhD, MIT. Published by Indiana University Linguistics Club, Bloomington, Ind. [1988].
Schubiger, M. (1956). Again: fall-rise intonation in English. *English Studies* **37**. 157-160.
Sharp, A.E. (1958). Falling-rising intonation-patterns in English. *Phonetica* **2**. 127-152.
Vaissière, J. (1983). Language-independent prosodic features. In Cutler, A. and Ladd, D.R. (eds.) *Prosody: Models and Measurements.* Berlin/Heidelberg: Springer, pp. 53-66.

Anthony T.C. Fox
Department of Linguistics and Phonetics
University of Leeds
Leeds
LS2 9JT

a.t.c.fox@leeds.ac.uk