Recursion in German Intonation Phrase Structure

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In this talk I argue for the presence of recursively organized intonational phrases (IPs) in German. Experimental data shows that sentences with complex clause configurations lead to F0 register effects that indicate recursive IP structures reflecting the syntactic branching. This suggests that – contrary to the *Strict Layer Hypothesis* – recursion might be a general principle of prosodic structure that derives from the syntax-prosody mapping. I offer an OT analysis that incorporates aspects of the Ito & Mester (2006) model of prosodic projection and a modification of Truckenbrodt's (2005) analysis on intonational phrasing.

Based on the study by Féry & Truckenbrodt (2005) a production experiment with the clause configurations shown in (1) was conducted.

(1) a. [SUBJ [RC] PRED] and [SUBJ PRED]
(( )$_{IP1}$( )$_{IP2}$)$_{IPx}$ ( )$_{IP3}$ IP-structure

b. [SUBJ PRED] and [SUBJ [RC] PRED]
( )$_{IP1}$ (( )$_{IP2}$ ( )$_{IP3}$)$_{IPx}$ IP-structure

c. [SUBJ PRED] and [SUBJ PRED] and [SUBJ PRED]
( )$_{IP1}$ ( )$_{IP2}$ ( )$_{IP3}$ IP-structure

Two conditions consisting of two conjoined root clauses, with one having a relative clause modifying the subject, were elicited ((1a) and (1b)) and compared to a baseline condition (1c). As the right edges of CPs trigger IP boundaries in German (Truckenbrodt 2005), the stimuli are expected to trigger three right IP boundaries.

An analysis of global F0 contours revealed that the phonetic reference lines associated with the IPs are lowered according to the syntactic structure. The condition illustrated in (1a) shows reference line lowering from the first to the second IP, but not from the second to the third one. Instead, the reference line of the third IP is partially reset, which is analyzed as lowering in relation to the reference line of the initial IP. Furthermore, some speakers realize an upstep of the nuclear pitch accent of IP_2 that targets the reference line of IP_1. This suggests the presence of a higher IP_X that includes IP_1 and IP_2. In contrast, the condition in (1b) shows reference line lowering from IP_1 to IP_2 and from IP_2 to IP_3, the amount of lowering being significantly greater from IP_2 to IP_3. Since this follows the principle *The Deeper The Steeper* (Féry & Truckenbrodt 2005), I assume the presence of a higher IP_X containing IP_2 and IP_3. The baseline condition (1c) shows a gradual lowering of the IP reference lines from left to right and is thus analyzed as having a flat IP structure.

Based on these findings I show that the constraint Align(CP, R; I, R) (Truckenbrodt 2005) alone is not sufficient to account for German IP structure. I propose to incorporate the constraint Align-L-R (Root, IP) (reminiscent of Match constraints (Selkirk to appear)) and argue that both Alignment and Match-type constraints are needed in order to account for the prosodic structure of German.

Féry, Caroline & Hubert Truckenbrodt (2005). Sisterhood and tonal scaling. *Studia Linguistica* 59, 223-243. ♦ Ito, Junko & Armin Mester (2006). Prosodic adjunction in Japanese compounds. In *Formal Approaches to Japanese Linguistics* 4. Cambridge, Mass.: MITWPL. ♦ Selkirk, Elisabeth (to appear). The syntax–phonology interface. In J. Goldsmith, J. Riggle, & A. Yu (eds.) *The handbook of phonological theory, 2nd edition.* Oxford: Blackwell. ♦ Truckenbrodt, Hubert (2005). A short report on intonation phrase boundaries in German. *Linguistische Berichte* 203, 273–296.