

# Information status and prosody in a corpus of non-scripted spoken German

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## The aim of this study

- analyze the interaction of intonation and information status (Krifka 2007)
- explore the prosodic variation that correlates with information status
- provide corpus-based data as input for an information structural informed speech synthesis (Kügler et al. 2012, 2013)

## What does this study illustrate?

- pitch accent distribution with respect to information status and contrast, topology, prosodic phrases, finality and continuation in a corpus of non-scripted speech
- combination of different factors constrains pitch accent distribution → information status alone does not constitute a single prosodic pattern

## Corpus Study

### Material = Non-scripted spoken German

- consists of seven advisory monologues in the context of mobile phones with different topics, e.g. multimedia
- average duration of the individual recordings is about five minutes spoken by a professional salesman
- two mobile phones were compared to each other

### Example of a monologue with all annotations

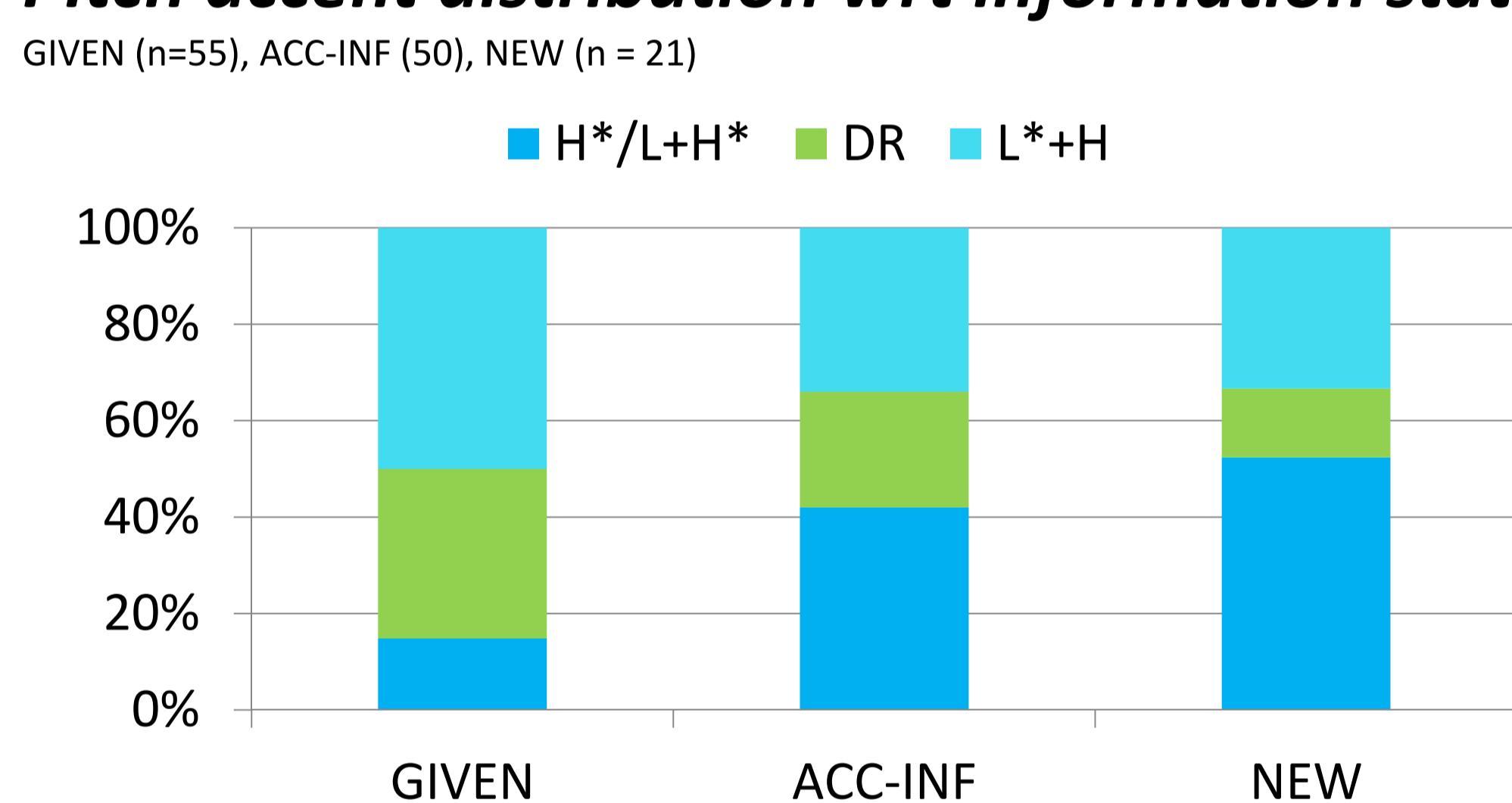
[Ich]<sub>ACC-SIT</sub><sub>VF</sub> [möchte]<sub>ISKL</sub> [[ihnen]<sub>ACC-SIT</sub> hier das Lumia 920  
 L\*+H  
 #P1#+C von der Firma Nokia]<sub>NEW, CF-PART</sub> #P1#+C und das  
 L\*+H DR  
iPhone 5 aus dem Hause Apple<sub>NEW, CF-PART</sub><sub>MF</sub> [vorstellen.]<sub>rSKL</sub>  
 #P1# [Beide]<sub>GIV-ACTIVE</sub><sub>VF</sub> [verfügen]<sub>ISKL</sub> über eine Kamera<sub>ACC-  
 INF</sub> und Autofokus<sub>ACC-INF</sub><sub>MF</sub> #P1#+C. [Sowohl das Nokia<sub>GIV-  
 ACTIVE</sub> als auch das iPhone 5<sub>GIV-ACTIVE</sub><sub>VF</sub> #P1#+C [verfügen]<sub>ISKL</sub>  
 L+H\*  
 auch über eine Zweitkamera<sub>ACC-INF</sub><sub>MF</sub> #P1#+C [die]<sub>ISKL</sub> für  
 H+H\*  
Videotelefonate<sub>NEW</sub><sub>MF</sub> [genutzt werden kann.]<sub>rSKL</sub> #P1#+F  
 L+H\*  
 [Interessant für die Fotos<sub>NEW</sub>]<sub>VF</sub> #P1#+C [ist]<sub>ISKL</sub> [natürlich  
 L+H\*  
 auch das Display<sub>ACC-INF</sub><sub>MF</sub> #P1#+C]

### Annotation Layers

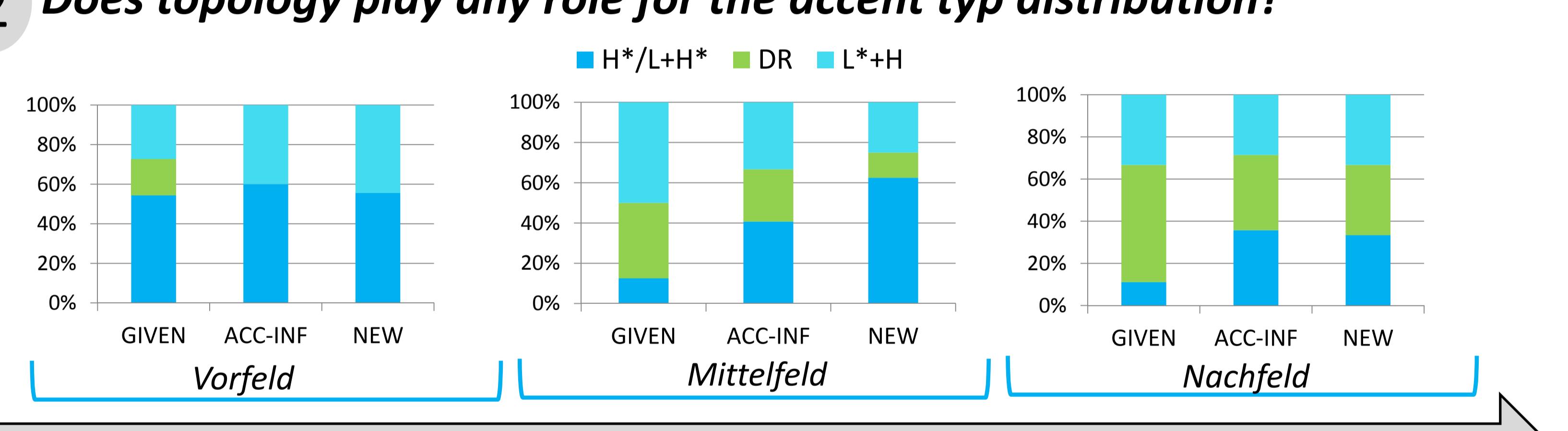
- Prosody → accent type, accent position, phrases (#P1#), boundary tones (GToBI, Grice et al. 2005)
- Information Status and Contrast (SFB-Guidelines, Dipper et al. 2010, annotator agreement of two annotators for information status: Cohen's  $\kappa$  of 0.75)
- Discourse function (Finality and Continuation, cf. von Essen 1964)
- Topology (**VorFeld**, **MittelFeld**, **NachFeld**)

## Results and Conclusion

### 1 Pitch accent distribution wrt information status



### 2 Does topology play any role for the accent typ distribution?



- similar distribution for all information status categories
- further factors have to be considered

- data mirror results of Féry & Kügler (2008) → prominences decrease to the end of a sentence
- But: topology cannot disentangle the choice of pitch accents alone
- closer analysis of the individual accents types necessary

### 3 What about prosodic boundaries?

	GIVEN	ACC-INF	NEW
has boundary/total discourse referents	11/57 (19,3%)	28/50 (56%)	11/21 (52,3%)

- ACC-INF and NEW are realized more often with a boundary after the discourse referent
- although discourse referents are annotated ACC-INF, they seem to be new in the discourse, and thus receive more prominence
- boundary (pause) is an additional factor to express *new information*

### 4 What about contrast?

	GIVEN	ACC-INF	NEW
has contrast/total discourse referents	16/57 (28%)	49/50 (98%)	18/21 (85%)

- ACC-INF and NEW were annotated frequently with *contrast* (specifically for this text type)
- textually based accessible annotation in combination with contrast receives higher prominence than textually and prosodically accessible referents (cf. Baumann & Grice 2006)
- accents are more prominent for the ACC-INF and NEW categories, possibly due to the contrast attribute

### 5 Conclusion

- no 1:1 mapping of information status and prosody
- combination of different factors is important
- both accent type and their prominence relation need to be considered as well

Baumann, S., Grice, M. (2006) The Intonation of Accessibility. *J. Pragmatics* 38, 1636-1657; Dipper, S., M. Götz and S. Skopetas. (2010). Information Structure in Cross-Linguistic Corpora. MS, Potsdam University; Essen, O. v. (1964): Grundzüge der hochdeutschen Satzintonation: Ratingen; Henn; Féry, C.; Kügler, F. (2008): Pitch accent scaling in German. In: *Journal of Phonetics* (36 (4)), S. 680–703; Grice, M., S. Baumann and R. Benzmüller. (2005). German Intonation in Autosegmental-Metrical Phonology. In: Jun, Sun-Ah (Ed.), *Prosodic Typology: The Phonology of Intonation and Phrasing*, 55-83; Krifka, M. (2007). Basic Notions of Information Structure. In: C. Féry, G. Fanselow & M. Krifka, (Eds.), *Working Papers of the SFB632, Interdisciplinary Studies on Information Structure*, 13–56, Potsdam: (ISIS) 6.; Kügler, F., B. Smolibocki and M. Stede. (2012). Evaluation of Information Structure in Speech Synthesis: The Case of Product Recommender Systems. ITG Conference on Speech Communication: IEEE, 127-131.; Kügler, F., B. Smolibocki, M. Stede and S. Vargas. (2013). Information structure in speech synthesis: early focus and post-focal givenness. In: P. Wagner (Ed.) *Studentexte zur Sprachkommunikation: Elektronische Sprachsignalverarbeitung 2013*. Dresden: (TUDpress). 56-63.

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