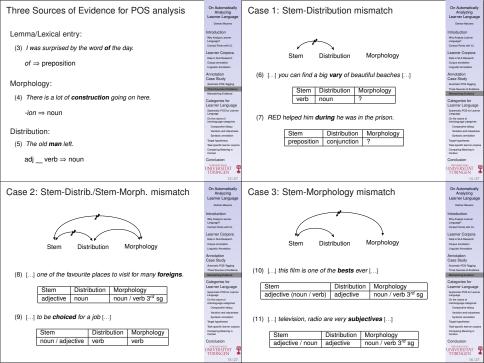
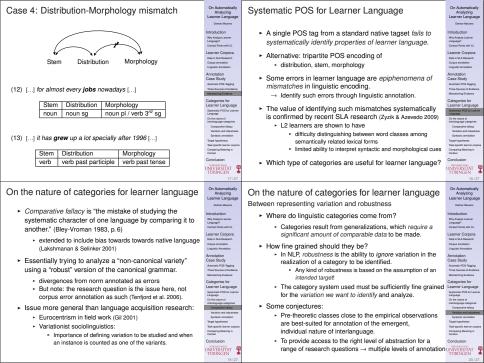
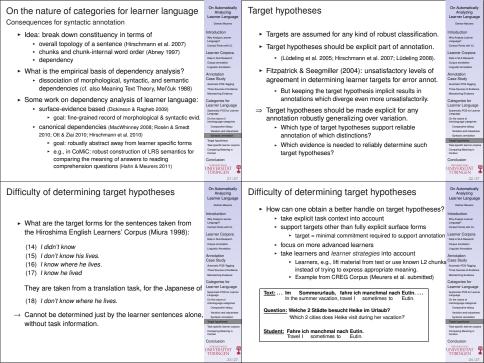
	On Automatically Analyzing Learner Language Cetrar Meures	Overview	On Automatically Analyzing Learner Language Detrar Meures
On Automatically Analyzing Learner Language Detmar Meurers Universität Tübingen Learner Corpus Research 2011 "20 years of learner corpus research: boking back, moving ahead" Louvain-ta-Neuve, 15. September 2011	Win Andrew Lamers Lamer	Motivations behind analyzing learner language and points of contact with computational linguistics Linguistic modeling of learner language	Introduction With Assign Learner Leapungs Leapu
Why Analyze Learner Language? Second Language Acquisition (SLA)	On Automatically Analyzing Learner Language Detrar Maures Introduction Why Analyze Learner Language? Contact Points with CL	Why Analyze Learner Language? Foreign Language Teaching (FLT)	On Automatically Analyzing Learner Language Detrar Meurers Introduction Why Analyze Learner Language? Contact Points with CL
SLA research is aimed at understanding how second languages are acquired (and how language works) empirical basis: analysis of learner data, SLA research also studies instructional intervention targeting different spects of language, used in different types of tasks, supporting different skinds of feedback, and the sequencing of what is to be acquired.	Learner Corpora Das in St. Ansacch Corpus arresiste Liqueix and Corpus Care St. Corpus Manuschild Manu	 adapt, advance, and test effectiveness of intervention methods in teaching practice analysis of learner language data helps document and advance understanding of student abilities and needs 	Learner Corpora Das in Rus Amessin Learner Corpora Das in Rus Amessin Linguista Avendra Annotation Case Study Assume FOS Signy Assume FOS Signy Assume FOS Signy Case Study Assume FOS Signy Assume FOS Signy Assume FOS Signy Experiment Experiment FOS Signy Experiment Experim

Contact Points with Computational Linguistics Learner corpora: representing, annotating, searching	On Automatically Analyzing Learner Language Detrar Meurers	Learner Data in SLA Research An example: Clahsen & Muysken (1986)	On Automatically Analyzing Learner Language Detrar Meurers
 can provide empirical evidence for SLA research can provide insights into typical student needs in FLT annotation = off-line analysis Intelligent Tultoring Systems: on-line analysis aimed at 	Introduction Why Analyze Learner Language? Contact Points with GL Learner Corpora Data in SLA Research Corpus amnetation Linguistic Amotation	They studied the acquisition of German word order by native speakers of Romance languages. Stages of acquisition:	Introduction Why Analyze Learner Language? Contact Points with CL Learner Corpora Data in SLA Research Corpor amontation Linguistic Annotation
supporting language acquisition provide immediate, individualized feedback, e.g.: meta-linguistic feedback in a form-focused activity incidental focus-on-form in a meaning-based activity	Annotation Case Study Automatic POS-Tagging Three Sources of Evidence Maretiching Evidence Categories for Learner Language	1. S (Aux) V O 4. XP V[+fin] S O 2. (AdvP/PP) S (Aux) V O 5. S V[+fin] (Adv) O 3. S V[+fin] O V[-fin] 6. dass S O V[+fin] Stage 2 example: Füher ich kannte den Mann	Annotation Case Study Automatic POS-Tagging Three Sources of Evidence Mismatching Evidence Categories for
 feedback on meaning (very rare in ITS) determine progression through pedagogical material 	Systematic POS for Learner Language On the nature of interfanguage categories Comparative fallacy	earlier AdvP Is knew _V [the man] _O Stage 4 example: Früher kannte ich den Mann	Learner Language Systematic POS for Learner Language On the nature of interlanguage categories Comparative fallacy
 Writer's aid tools: on-line analysis of learner language to provide immediate feedback aimed at producing text 	Variation and robustness Syntactic annotation Target hypotheses Task-specific learner corpora Comparing Meaning in Contest	earlier _{AdvP} knew _{V[+fin]} I _S [the man] _O ► How is the data characterized?	Variation and robustness Syntactic annotation Target hypotheses Task-specific learner corpora Comparing Meaning in Context
 Language testing: off-line or on-line analysis to support or automate assessment of learner abilities (cf. Meurers 2012) 	Conclusion UNIVERSITAT TUBINGEN 5/27	 lexical and syntactic categories and functions some acquisition stages are well-formed, others ill-formed 	Conclusion UNIVERSITAT TUBINGEN
Annotation: Error Annotation and Beyond	On Automatically Analyzing Learner Language	Annotation of Linguistic Properties	On Automatically Analyzing Learner Language
 SLA research essentially observes correlations of linguistic properties, whether erroneous or not. 	Detrar Meures Introduction Why Analyze Learner Language?	► Annotation schemes for native language corpora have	Detrar Mourers Introduction Why Analyze Learner Language?
 The annotation of learner corpora, however, has mostly focused on errors made by the learners. 	Contact Points with CL Learner Corpora Data in SLA Research Corpus annotation	been developed for a wide range of linguistic properties: • part-of-speech, morphology • syntactic constituency, lexical dependency structures	Contact Points with CL Learner Corpora Data in SLA Research Corpus annotation
 Even when learner errors are the research focus, their correlation with other linguistic properties is relevant. 	Linguistic Annotation Annotation Case Study Automatic POS-Tagging	 semantics (word senses, coreference), discourse structure An annotation scheme is only as good as the distinctions 	Annotation Case Study Automatic POS-Tagging
 Linguistic annotation also is important for capturing measures and characteristics of language development Complexity, Accuracy & Fluency (Housen & Kuiken 2009) 	Three Sources of Evidence Marratching Evidence Categories for Learner Language Subsyste DYS by Lauren	it reliably supports making based on evidence in corpus. • E.g., particle vs. preposition dropped in PTB tagset • More classes can actually be more reliable if they are	Three Sources of Evidence Mismatching Evidence Categories for Learner Language Systematic POS for Learner
→ Lu (2010) Criterial Features (Hawkins & Buttery 2009, 2010) → Alexopoulou et al. (2011)	Language On the nature of interlanguage categories Comparative fallacy Variation and robustness	more coherent in terms of their observable properties. ► cf. BNC Tag Enhancement Project (CLAWS7 → CLAWS5)	Language On the nature of interlanguage categories Comparative fallacy Variation and robustness
 overuse/underuse of linguistic material (Wiersma et al. 2011, Hirschmann, Lüdeling, Rehbein, Reznicek & Zeldes 2010) 	Comparing Meaning in Context	► Each type of annotation typically requires an extensive manual annotation effort → gold standard corpora	Syntactic annotation Target hypotheses Task-specific learner corpora Comparing Meaning in Context
	Conclusion	1	Conclusion

Quality of Annotation	On Automatically Analyzing Learner Language Detrar Meures	Case study on part-of-speech annotating NOCE (Díaz Negrillo, Meurers, Valera & Wunsch 2010)	On Automatically Analyzing Learner Language Detrar Meurers
How can high quality annotation be obtained? Keep only reliably and consistently identifiable distinctions described in detailed manual Moutilainen & Järvinen 1995.	Introduction Why Analyze Learner Language? Contact Points with CL Learner Corpora		Introduction Why Analyze Learner Language? Contact Points with CL Learner Corpora
Including appendix on hard cases Sampson & Baharczy 2003) Annotate corpus several times and independently, then test interannotator agreement (Artsien & Poesio 2009) Detect annotation errors through automatic analysis of comparable data recurring in the corpus (http://decca.osu.edu) Automatic annotation tools which can be trained on such gold standard annotation are available. But quality of automatic annotation drops significantly for text differing from the gold standard training material. Are the annotation scheme distinctions for native language appropriate and sufficient for learner language research?	Date in Eur Research Copyse average Manufacture Case Shuthy Special Special Case Shuthy Special Speci	The NOCE learner corpus (Díaz Negrillo 2009) Short essays written by Spanish 1 st and 2 nd year students of English, annotated with editing and error tags 998 texts, 337.332 tokens How about adding linguistic annotation? Explored automatic part-of-speech (POS) annotation What does it mean to POS-annotate learner language?	Clans in East Research Linguist Avoision Linguist Avoision Linguist Avoision Annotation Class Study Advantage Roll Case Study Advantage Roll Linguist Linguist Linguist Systematic Study Linguist Linguist Systematic Study Linguist Linguist Systematic Study Linguist Ling
Automatic POS-Tagging of NOCE	On Automatically Analyzing Learner Language	Aspects of a qualitative analysis	On Automatically Analyzing Learner Language
Setup • Used 3 POS taggers trained on WSJ newspaper text, using Penn Treebank tagset • TreeTagger, TnT tagger, Stanford tagger • Tagged the error-annotated section of NOCE Results • Manually evaluated POS tags assigned by taggers to 10 texts by 10 different participants (1.850 words) • Accuracy of automatically assigned tags • TreeTagger: 94.95%	Demon Mauran Introduction in the Analysis Learner Control Finds and Finds and Control Finds and	We found lower performance for expressions which do not exist in English (cf. de Haan 2000; van Rooy & Schäfer 2002). Spelling (1) I think that university teachs to people [] Segmentation (2) They can't pay their studies and more over they have to pay a flat [] But is tagging learner language really just a robustness issue, like adapting taggers to another domain? What does it mean to use POS tags developed for	Comer Moures Introduction Why Analysis Learner Contend Print with Cit. Learner Corpora Claims of Advances Contend Print with Cit. Amendation Case Shouly Extended Contended The Amendation Case Shouly Learner Contended Case Shouly Learner Language Contended Contended
 TnT Tagger: 94.03% Stanford Tagger: 88.11% What do these results mean? 	Syntactic annotation Target hypotheses Task-specific learner corpors Comparing Meaning in Contest Council useign	native language for the interlanguage of learners? Which research questions can "native POS" tags answer?	Syntactic annotation Target hypotheses Task-specific learner corpora Comparing Meaning in Contest Connecticution







= taking task, strategic competence, and L1 into account in learner models of Tutoring Systems (Amaral & Meurers 2008) - clear connection to language testing research * Most current learner language corpora consist of essays, yet learners produce language in a wide range of contexts, naturalistic or instructed, e.g., - email and chat messages - answering reading or listening comprehension questions - asking questions in information gap activities To obtain corpora which are interpretable & representative of learner language, we need more language produced in a wide range of explicit task contexts.	Constitution of the Consti	Using task-specific learner corpora Comparing Meaning in Context Project (http://purl.org/icali/comic) Task-based corpora can also support an investigation of aspects such as meaning, information structure, In collaboration with Nina Vyatkina (KU) and Kathy Corl (OSU) we are compiling a large corpus of answers to reading comprehension questions written by US college students learning German Text + Questions + Target Answers + Learner Answers, graded as adequate or inadequate response Makes it possible to study variation in forms used by language learners to realize the same meaning. Supports research on information structuring (given/locus). On the practical side: Automatic content assessment of reading comprehension answers, currently with 84.6% accuracy (Meurers et al. 2011) on balanced test set.	On Advantación Adv
uerying in SLA planters and uscussed an approach to the POS analysis of learner language separating • lexical, morphological, and distributional information • Goal: Corpus annotation systematically characterizing language, native-like as well as learner innovations. • The granularity of the annotation needed depends on the research question → multi-level annotation	On Automatically Analyzing Learner Language Tomos Marco Marc	References Ants., J. & S. Garager (1998). Tag Sequences in Learner Corpora: a Key to Intertanguage Grammar and Discourse. In S. Garager (1998). Tag Sequences in Learner Corpora: a Key to Intertanguage Grammar and Discourse. In S. Garager (ed.). Learner English on Computer, London: New York: Longman, pp. 122-414. 122-414. 122-414. 123-414. 124-415. 125-414. 125-415.	On Automatically Analysing Learner Canage Care Learner Language Care Mouse I Indicated Care Language Care Mouse I Indicated Care Language Care

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