University of Washington (& beyond) site update

DELPH-IN Summit
July 2, 2012
Sofia, Bulgaria

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Previews

- Negation library now on firm typological foundations
- Semantics of negation in cross-linguistic perspective
- Information structure library
- ICONS
- Discussion/Q&A on using ACE for parsing and generation
- Demo of a new browser-based full-forest treebanking tool
- CLIMB (meta-grammar engineering)
- Phenomena catalogue
- Thesis ideas/feedback (Mike, Zina, Ned)

Grammar engineering for language documentation

- AGGREGATION: funded (at 50% for pilot; 2 year project)
    - Goals: automatically extract answers to Grammar Matrix questionnaire from IGT (ODIN, field projects)
    - Initial steps: modeling verbal morphology (Bender et al 2012; Wax in progress)
- Ling 567:
    - Collaborations with field linguists: Ingush [inh] (Nichols), Hup [jup] (Epps), Sri Lanka Malay [sci] (Nordhoff)
    - Other: Georgian [kat], Bosnian-Serbo-Croatian [bcs]

CARBON Treebank

- NSF funding denied

- Survey indicated strong interest from the field => mailing list to which to advertise similar DELPH-IN resources

- MS project (Schneider) on projecting ERG derivations to PTB-style trees

  - Adapt step-wise, closer and closer to PTB representation (bracketing syntax only, labels, tokenization, flatter structures, empty elements)

  - Train Stanford (or similar) parser on the various versions of the treebank and measure performance on the DDEC evaluation set (Bender et al 2011)

Fokkens et al 2011: Spring Cleaning and Grammar Compression

- Spring cleaning: removing redundant types, i.e., those that are neither *instantiated, introducers of features, or lower bounds* for two other types. (output is tdl)
- Grammar compression: take flopped grammar and remove all types that are neither directly *referenced* in instances nor *glbs* of referenced types
- Applied spring cleaning to a variety of Matrix-derived grammars and found a large proportion of Matrix core types going unused, relatively few language-specific types
- Applied grammar compression to big & medium grammars and found compression rates of 37% (BURGER), 48% (ERG), 51% (Jacy), 52% (GG), and 78% (Wambaya)
- The beginning of a larger enterprise of grammar comparison and exploration...

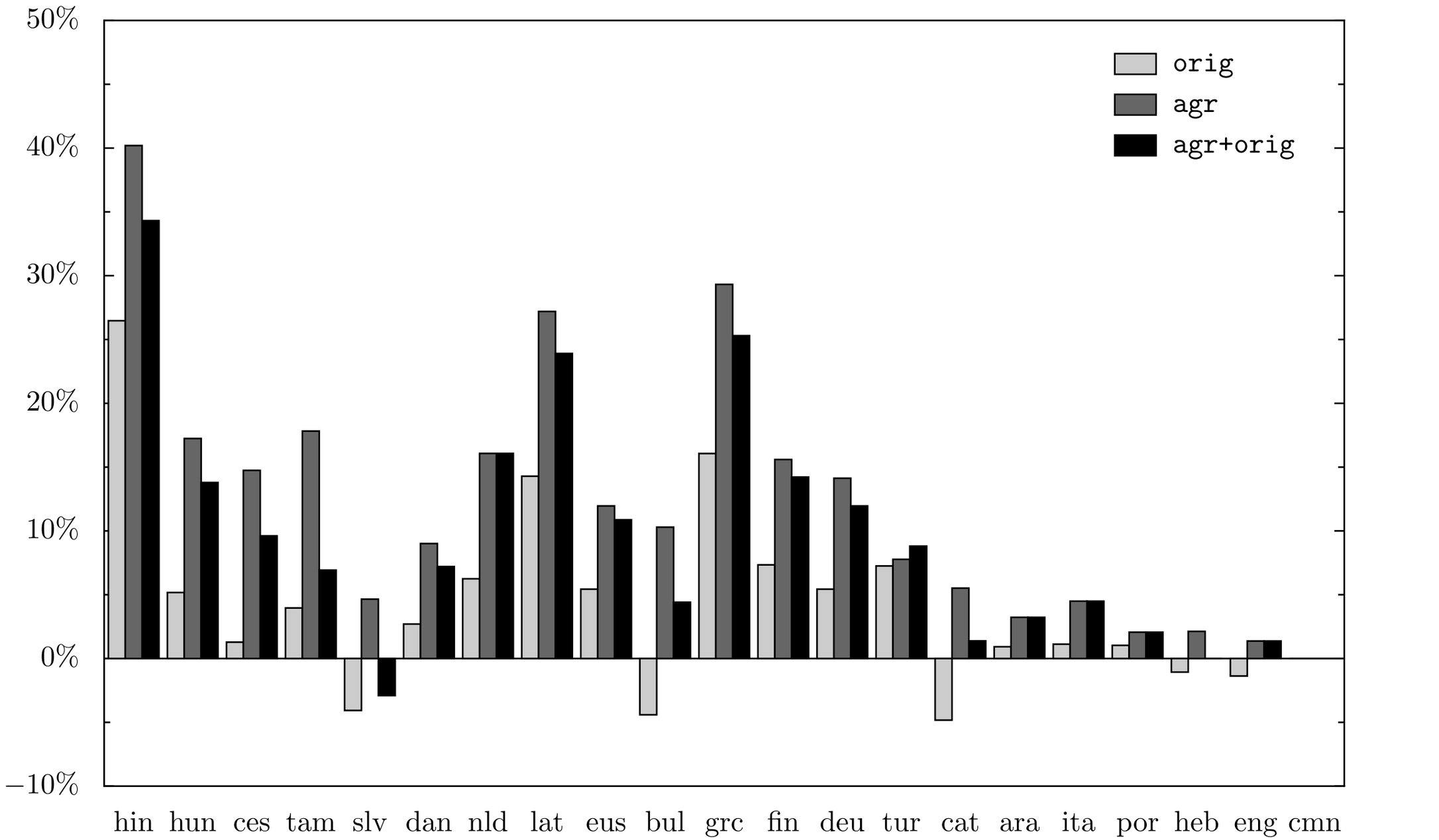
Hohensee 2012: It's only morpho-logical: Modeling agreement in cross-linguistic dependency parsing

- Previous work on language-independent dependency parsing was stymied by morphologically complex languages

- Part of the problem: no modeling of agreement

- Modified MSTParser (McDonald et al, 2006) by adding agreement features:
  - <attr>_agrees, head=<headPOS>, dep=<depPOS>
  - <attr>_disagrees, head=<headPOS>, dep=<depPOS>
  - head_<attr>=value, head=<headPOS>, dep=<depPOS>
  - dep_<attr>=value, head=<headPOS>, dep=<depPOS>
  - ... plus versions of each with dependency label

Hohensee 2012: It's only morpho-logical: Modeling agreement in cross-linguistic dependency parsing



Published at NAACL (Hohensee & Bender 2012)

Gola 2012: An analysis of translation divergence patterns using PanLex translation pairs

- If we could use lexical resources like PanLex to create (or beef up) transfer grammars, massively multi-lingual MT becomes more tractable

- To what extent would naïve transfer rules built on translation pairs run into translation divergence problems?

- Evaluated ita > fra, ita > eng (and at some remove, eng > tha), contrasting low-frequency with high-frequency verbs

- Primary result: translation divergence is more of an issue with high frequency verbs; using PanLex to fill in the “long tail” may be feasible

agree (Slayden and Rarrick)

- Parsing and generation with DELPH-IN grammars, using either LKB or PET config files (tested on ERG, Jacy, Thai and MCG)

- Chart dependencies and DELPH-IN regex morphology, but not yet full REPP support

- Spiffy UI (WPF client app); aside from UI, code base runs in mono (on linux) as well as .NET

- Allows multiple grammars to be loaded simultaneously

- Current (ambitious) work: bidirectional, declarative MRS rewriting for transfer-based MT

agree grammar engineering

Home | Parse | Transfer | Generate | Options

Load | Save | ERG | Thai | Jacy | MCG | old demo | transfer grammar | th-en | en-th

File | Grammars | Funcs

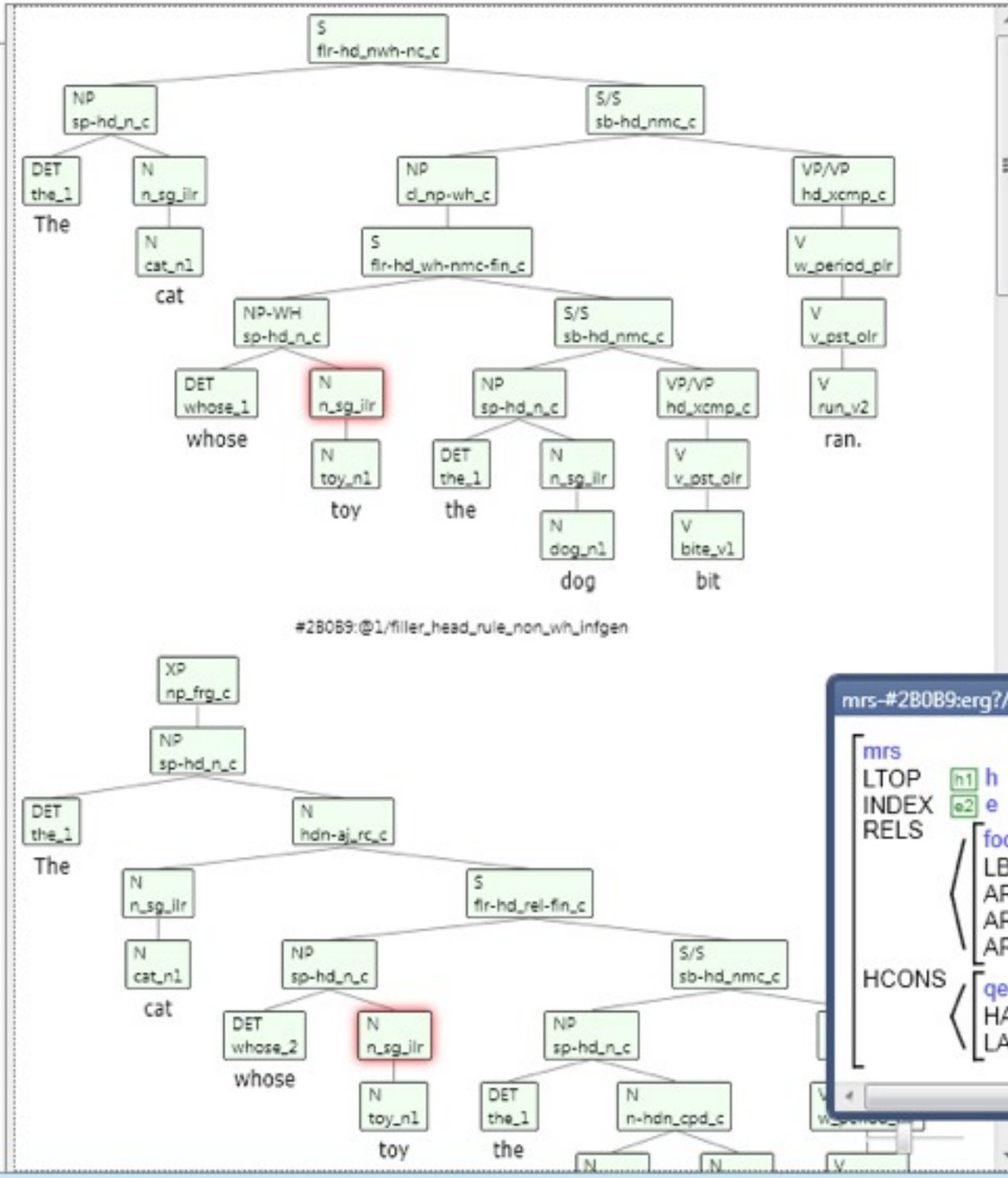
Grammar: erg | Parse derivations explorer | Grammar: jacy | Tfs: 運転 が 吠える

The cat whose toy the dog bit ran.

7 Reset

Rules | Lexical Entries

			license	type	#uses	#a
☑	0	0	the_1	LexicalEntry	7	
☑	1	1	cat_n1	LexicalEntry	7	
☑	1	1	n_sg_ilr	LexicalRule	7	
☑	0	1	sp-hd_n_c	GrammarRule	1	
☑	2	2	whose_1	LexicalEntry	2	
☑	3	3	toy_n1	LexicalEntry	7	
☑	3	3	n_sg_ilr	LexicalRule	7	
☑	2	3	sp-hd_n_c	GrammarRule	7	
☑	4	4	the_1	LexicalEntry	7	
☑	5	5	dog_n1	LexicalEntry	7	
☑	5	5	n_sg_ilr	LexicalRule	4	
☑	4	5	sp-hd_n_c	GrammarRule	4	
☑	6	6	bite_v1	LexicalEntry	4	
☑	6	6	v_pst_olr	MorphologicalRu	4	
☑	6	6	hd_xcmp_c	GrammarRule	3	
☑	4	6	sb-hd_nmc_c	GrammarRule	3	
☑	2	6	flr-hd_wh-nmc-fi	GrammarRule	2	
☑	2	6	cl_np-wh_c	GrammarRule	2	
☑	7	7	run_v2	LexicalEntry	4	
☑	7	7	v_pst_olr	MorphologicalRu	7	
☑	7	7	w_period_plr	MorphologicalRu	7	
☑	7	7	hd_xcmp_c	GrammarRule	4	
☑	2	7	sb-hd_nmc_c	GrammarRule	2	
☑	0	7	flr-hd_nwh-nc_c	GrammarRule	1	
☑	2	2	whose_2	LexicalEntry	5	
☑	6	6	bit_n2	LexicalEntry	2	
☑	6	6	n_sg_ilr	LexicalRule	3	
☑	5	6	n-hdn_cpd_c	GrammarRule	3	



mrs-#2B0B9:erg?/@1/filler_head_rule_non_wh_infgen

```
[ mrs
  LTOP  [ h1 ] h
  INDEX [ e2 ] e
  RELS  < [ focus_d_rel
            LBL  [ h1 ]
            ARG0 [ e3 ] e
            ARG1 [ e2 ]
            ARG2 [ x4 ] x ]
        , [ _the_q_rel
            LBL  [ h5 ] h
            ARG0 [ x4 ]
            RSTR [ h6 ] h
            BODY [ h7 ] h ]
        , [ _cat_n_1_rel
            LBL  [ h6 ]
            ARG0 [ x4 ]
  HCONS < [ qeq
            HARG [ h6 ]
            LARG [ h6 ] ]
        , [ qeq
            HARG [ h10 ]
            LARG [ h10 ] ]
        , [ qeq
            HARG [ h15 ]
            LARG [ h15 ] ]
```

System Log

```
agree-sys (debug), x64 gc=Server, 4 CPUs
erg-loader Begin loading 'erg.gee'.
erg-loader Tdl files hash: 3B6EB723
erg-loader Expanding all type definitions.
erg-loader Loading grammar rule entries.
erg-loader Loading lexical rule entries.
erg-loader Scanning lexical entries.
erg-loader Loading node label entries.
erg-loader Loading start symbol entries.
erg-loader loading definitions for all Entries
erg-loader Check rule compatibility.
erg-loader Loaded 'erg.gee' in 6.4765 s.
jacy-loader Begin loading 'jacy.gee'.
jacy-loader Tdl files hash: BD7723A8
jacy-loader warning: type 'extracted-adj-phras
jacy-loader warning: type 'basic-head-filler-ph
jacy-loader warning: type 'basic-head-filler-ph
jacy-loader warning: type 'gap' already has pa
jacy-loader warning: type 'conj-ref-ind' alread
jacy-loader Expanding all type definitions.
jacy-loader Loading grammar rule entries.
jacy-loader Loading lexical rule entries.
jacy-loader Scanning lexical entries.
jacy-loader Loading node label entries.
jacy-loader Loading start symbol entries.
jacy-loader loading definitions for all Entries
```

System Log | System Info

Ready