Site Update: University of Washington

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Outline

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Come and stay a while...

The Grammar Matrix Customization System is evolving from a place to download something to a place to stay and work

- More phenomena available through libraries
- $\longrightarrow$ it takes longer to input analyses
- $\longrightarrow$ more options to experiment with

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Come and stay a while...

- Test by generation (Bender et al. 2010, ACL demo)
- Work in progress: Allowing users more flexibility in defining type hierarchies
  - Lexical entry and lexical rule types
  - Cross-classification
  - Fewer redundant constraints

The longer users stay, the bigger the grammars

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Size of customized grammars (Ling 567, 2010)

Language	Family	Lg-specific types	Matrix+head types	Lex rules	Phrasal rules	Choices
ERG	Germanic	3654	N/A	71	226	N/A
Breton	Celtic	220	413+510	57	49	1692
Cherokee	Iroquoian	182	413+510	95	27	985
French	Romance	137	413+510	29	22	740
Jamamadí	Arauan	188	413+510	87	11	1151
Lushootseed	Salish	95	413+510	20	8	391
Nishnaabemwin	Algonquian	289	413+510	124	50	1754
Pashto	Iranian	234	413+510	86	19	1839
Pali	Indo-Aryan	237	413+510	92	55	1310
Russian	Slavic	190	413+510	56	35	993
Shona	Bantu	136	413+510	51	9	591
Vietnamese	Austro-Asiatic	105	413+510	2	26	362
Average		182.9	413+510	63.5	28.3	1073.5

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Outline

Development of analyses

- Improvements to morphotactics (see Mike's talk and Goodman and Bender 2010 at MFG)
- Argument optionality (Saleem and Bender 2010, COLING)
- Information structure (see Emily and Sanghoun's talks on Tuesday)
- Improvements to word order (see Antske's talk later today)
- And more to come...

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Outline

Evaluation

Current evaluation focus

How well do the analyses encoded in the core grammar + libraries scale across typologically and genetically diverse natural languages?

- Chose seven languages from seven different language families
- Created test suites
  - based on descriptive grammars
  - covering just those phenomena purported to be covered in the libraries
- Once test suites were frozen, created choices files based on descriptive grammars and test suites

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The Map

(Created with Google Maps, using KML data from WALS Haspelmath et al. 2008.)

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The Numbers

Language	Coverage raw	Coverage treebanked	Overgeneration	Spurious ambiguity	Average readings
Abkhaz	100%	94.4%	0%	2.8%	1.08
Chemehuevi	82.8%	75.9%	0%	3.4%	1.04
Hausa	42.1%	36.8%	6.7%	5.3%	1.31
Jingulu	100%	100%	0%	46.7%	2.00
Malayalam	89.7%	87.2%	2.8%	2.8%	1.09
Nkore-Kiga	78.6%	78.6%	11.5%	0%	1.00
West Greenlandic	93.9%	93.9%	0%	0%	1.00

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Qualitative evaluation

Phenomenon	abk	hau	jig	kal	mal	nyn	ute
Negation	+	–	+	+	+	+	+/–
Yes-No Questions	+	–	+	+	+	+	–
Word Order	–	+/–	+	+	+	–	–
N/NP Coordination	+/–	+/–		–	+/–	+/–	+
S Coordination			+	–	–	+	+
V/VP Coordination		+/–			–	–	–
Determiners/definiteness	–	–			+		
Tense/Aspect	+	+/–	+	+	+	+	+
Auxiliaries		+/–	+			+	
Morphology	+	+	+/–	+	+	+	+/–
Case			+	+	+/–		+
Verb Subject Agreement	+	+	+	+		+	+
Verb Object Agreement	+		+	+		+	+
Person	+	+	+	+	+	+	+
Number	+	+	+	+	+	+	+/–
Gender	+	+	+	+	+	+	+

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Matrix-ODIN Mash-up (MOM)

- The ODIN project is collecting IGT from pdfs published on the web (Lewis, 2006).
- Fei Xia and colleagues (e.g., Lewis and Xia 2008) have begun automatically creating typological profiles of languages based on this data.
- Could we get information rich enough to automatically fillout the Matrix customization system's questionnaire?
- Initial steps: Extracting verbal morphology 'choices' (David Wax, MA student)

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Translation mismatches

- Big picture goal: MT for many language pairs built on customized Matrix grammars and PanLex (Mausam et al., 2009)
- To what extent can we use simple pred-to-pred mapping for transfer rules? (Nygaard et al., 2006)
- Measuring and classifying translation divergence (Dorr, 1994) across a sample of translation pairs in PanLex (Francesca Gola's MA thesis)

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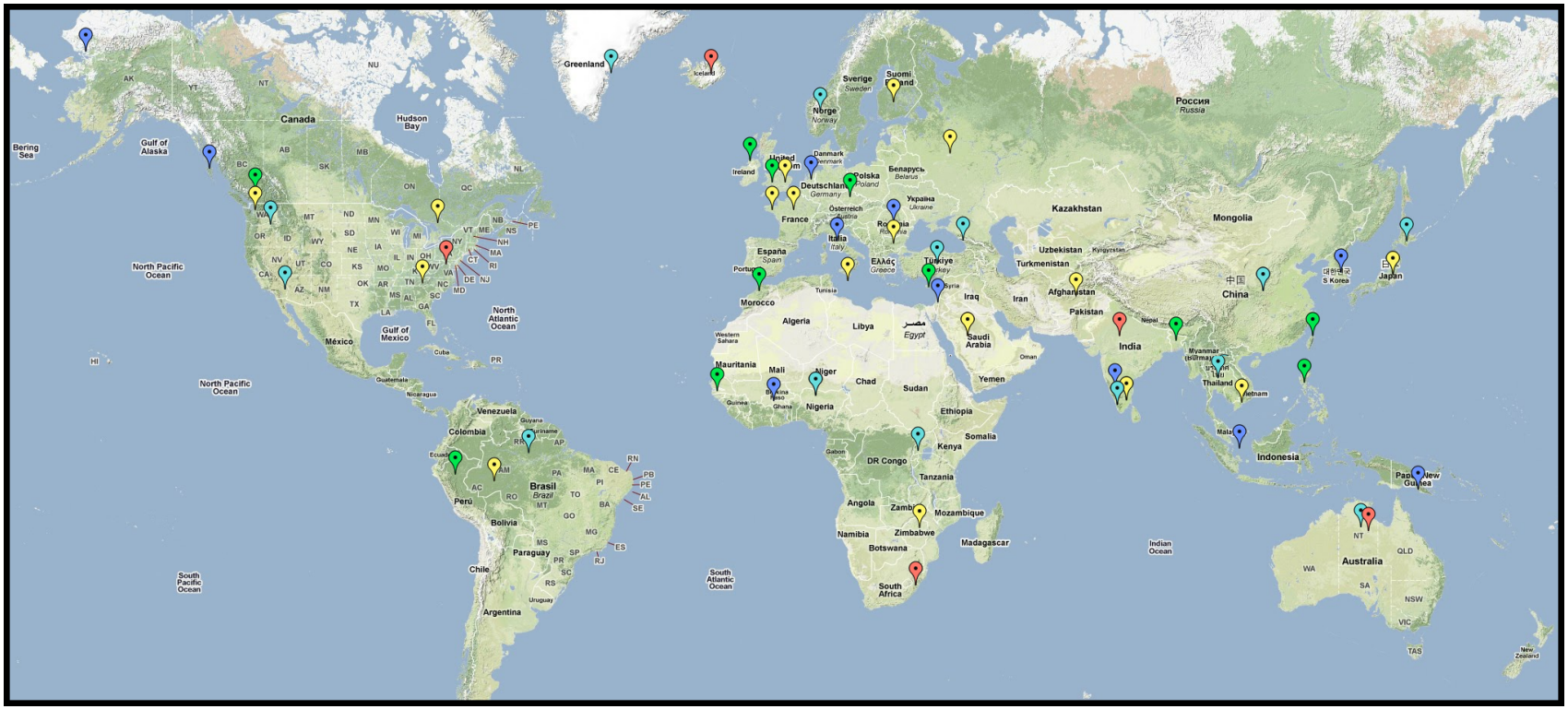
Just for fun: Customized languages map



Map image courtesy of Google Maps, location data courtesy of WALS (Haspelmath et al., 2008).

Outline

Visibility

- All three major NLP explicitly included grammar engineering this year.
- We made a point of doing our part to show that grammar engineering merits such attention.
  - With some success! (Drellishak, 2010; Bender et al., 2010; Saleem and Bender, 2010)
- Also, tutorials: LREC, HPSG

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