Linguistic Type Database Update

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Why the LTDB?

- It is hard to work on a grammar that you did not write (just like any software)
  - Or that you wrote in collaboration
  - Or that you wrote sometime ago
  - Or that is generated by the MATRIX
- It is hard to be consistent within a treebank
  - Especially if it has multiple annotators
  - Or that you treebanked some bits some time ago
  - Or just if it is very big
- LTDB is an attempt to store the information you had in your mind when you wrote the grammar and make it more accessible
  - inspired by literate programming (Knuth, 1992)
  - store documentation **about the grammar** — **in the grammar files**

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LTDB

- Completely rewritten Lexical Type Database (Hashimoto et al., 2007a,b)
- Generalized in 2014 to handle all types (and some instances)

The Linguistic Type Database

status	thing	source	endi
type	normal type		
ltype	lexical type	(type and in lexicon)	lt
rule	grammar rule	(LKB::*RULES)	c
lrule	lexical rule	(LKB::*LRULES)	
irule	inflectional rule	(LKB::*LRULES and (inflectional-rule-p id))	
root	start symbol	(LKB::*root-entries*)	

Rules also list number of daughters and head daughter.

Headedness

We are **Head-driven** Phrase Structure Grammar, so it is nice to know the headedness of rules. We record 5 different possibilities:

▲	unary: headed
△	unary: non-headed
◭	binary: left-headed
◮	binary: right-headed
◬	binary: non-headed

For each rule, in look for the daughters of the rule, see if `*head-daughter-path*` exists (only implemented for LKB at the moment).
Now read from `rules.hds` **NEW**

Use the new-ish comment field

Originally:

```
; <type val="n_-_c_le">
; <description>Intransitive count noun (icn)
; <ex>The dog barked.
; <nex>
; <todo>
; </type>
n_-_c_le := n_intr_lex_entry.
```

This becomes (`ltype-comment`):

```
n_-_c_le := n_intr_lex_entry
"""Intransitive count noun (icn)
<ex>The dog barked.
<nex>Much dog bark.""".
```

Other Changes

- Integration with grammar catalogue
- Description written in Restructured Text
  - Allows more flexible formatting
  - Special macros for positive and negative examples
- Scripts written in python3
- Source available in github: https://github.com/fcbond/ltdb

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2020 enhancements

- ACE, LKB and PET now allow docstrings with `"""  """` on all types and instances, to read them all
  - Thanks everyone for their support.
- The fftb can link to this for rules and lexical types
  - Maybe we should include an LTDB url in the metadata
- Moved to python3
- Now read tdl with PyDelphin
- You can specify a particular grammar (script file or ace config)

  latest version a branch on github, will move next week

2022 Enhancements

- Trees and MRS displayed using javascript (like delphin-viz)
- Search for MRS predicates in the corpus, as well as types and words
- Slightly more robust
- Can read grammars with LKB (using `lkb/script`) or PyDelphin (using `ace/config.tdl`) or both
- Can pre-load some lisp before reading the config file e.g. to load the `mal` grammar:

```
./make-ltdb.bash --lisp '(push :mal *features*)'
--script /path/to/grammar/lkb/script
--acecfg /path/to/grammar/ace/config-mal.tdl
```

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Other useful information

- Make the conversion logs available (so the grammar developer or user can see if there are any known issues) — typically not all MRS's can be converted to DRMS or JSON
- Give a link to a compressed version of the database, so people can download it — may be easier to access the trees and MRSs for non–delph-in users
  there have been issues with people failing to get MRSs int he past, ...

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Major Changes 2023

- Completely rewritten to use **flask** rather than a bunch of cgi scripts
- Each grammar+version is a new DB
  a single ‘grammar’ may have multiple LTDBs
- Only read grammar from ACE
  (LKB was inconsistent with the docstring handling)

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Metadata

Require at least the following (and a version file)

```
GRAMMAR_NAME="English Resource Grammar"
SHORT_GRAMMAR_NAME="ERG"
ACE_CONFIG_FILE="ace/config.tdl"
```

Each sub-grammar should have a different version file.

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Known ToDos

- Add look up box
  - And all lost functionality
  - Including MRS search
- Add the Matrix documentation docstrings
- Host at Palacký (and maybe alias somehow)
- Look at full tree search over trees and DMRS
  - https://match.grew.fr/
  - Fangorn
  - WeSearch

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Discussion I

- Who is using this?
- Any requests?
- We will try to host ltdb
- It could interface with fftb better
- If we want to annotated features (like INFLECTED of MC), where should this go? In the type that first introduces them? Is there a way to index this (i.e. can we output it automatically from the lkb or pydelph<in)?
- Should link the examples linked to test framework

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Discussion II

- How many examples and how to chose them?
  - Currently I show 8 (could configure)
  - I show the shortest
    used to show the first I saw, which could be very testsuite heavy
    not ideal, but too long also not so good
    clever ideas solicited
    look at the shortest starting after 10%?
- I desperately need someone who understand javascript better than me to help a bit
- Should I do MRS/DRMS conversion on the fly?
  People have found the conversion log useful
- Good to link to grammar

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References I

Chikara Hashimoto, Francis Bond, and Dan Flickinger. 2007a. The lextype DB: A web-based framework for collaborative multilingual grammar and treebank development. In *First International Workshop on Intercultural Collaboration (IWIC-2007)*, pages 44–58.

Chikara Hashimoto, Francis Bond, Takaaki Tanaka, and Melanie Siegel. 2007b. Semi-automatic documentation of an implemented linguistic grammar augmented with a treebank. *Language Resources and Evaluation*, 42(2):117–126. URL `http://dx.doi.org/10.1007/s10579-008-9065-9`, (Special issue on Asian language technology).

Donald E. Knuth. 1992. *Literate Programming*. CSLI Publications.

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