The LinGO Grammar Matrix
Rapid Grammar Development for Hypothesis Testing
(Appendix)

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This tutorial presents joint work with:

Safiyyah Saleem, Scott Drellishak, Michael Wayne Goodman, Daniel P. Mills and Laurie Poulson.
Appendix

This appendix contains slides pertaining to aspects of the sample grammar not covered in the main tutorial.
Outline

1. Word Order
2. Person, number, gender
3. Tense/aspect
4. Coordination
5. Lexicon
Outline

1. Word Order
2. Person, number, gender
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4. Coordination
5. Lexicon
Most permutations of O, S, and V are possible, under the appropriate information structure interpretations.

⇒ Select “free word order” on the word order page.

<table>
<thead>
<tr>
<th>Word Order</th>
<th>Person, number, gender</th>
<th>Tense/aspect</th>
<th>Coordination</th>
<th>Lexicon</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Main constituent order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most permutations of O, S, and V are possible, under the appropriate information structure interpretations.</td>
</tr>
<tr>
<td>=&gt; Select “free word order” on the word order page.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Norma fethi-t-u l-bieb. (SVO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norma opened-3fsg-3msg df-door-msg</td>
</tr>
<tr>
<td>“Norma opened the door.” (? 141)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Norma l-bieb fethi-t-u.</th>
<th>(SOV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetthi-t-u Norma l-bieb.</td>
<td>(VSO)</td>
</tr>
<tr>
<td>L-bieb Norma fetthi-t-u.</td>
<td>(OSV)</td>
</tr>
<tr>
<td>L-bieb fetthi-t-u Norma.</td>
<td>(OVS)</td>
</tr>
<tr>
<td>fetthi-t-u l-bieb Norma.</td>
<td>(VOS)</td>
</tr>
</tbody>
</table>
Maltese has demonstrative determiners as well as possible indefinite articles which appear pre-nominally.

⇒ Select ‘has independent determiners’
⇒ Select ‘determiner precedes the noun’

Pawlu kiteb dan il-ktieb
Pawlu wrote this df-book
“Pawlu wrote this book.” (? , 60)

wafβda mara
INDEF-fsg woman “a woman” (? , 155)
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Singular and plural markers are present in our dataset. According to wikipedia (http://en.wikipedia.org/wiki/Maltese_language, accessed 2010/05/13), Maltese also distinguishes dual on nouns. Since there is no evidence of dual on verbs, we will assume a non-singular type which subsumes dual and plural.

⇒ Define ‘singular’, ‘non-singular’, ‘dual’ and ‘plural’ on the Number page

Note

⇒ More relevant data is needed to find the correct representation of number in Maltese
There are pronouns and there is subject agreement for 1st, 2nd and 3rd person
⇒ Select the option 1st, 2nd, 3rd on the person page

There are (to our knowledge) no subtypes of 1st person (inclusive/exclusive distinction)
⇒ Select ‘none’ for subtypes of 1st person
Maltese distinguishes masculine and feminine gender, on nouns and in subject agreement
⇒ Define masculine and feminine on gender page
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## Tense/aspect Data

<table>
<thead>
<tr>
<th>Pawlu</th>
<th>kiteitb</th>
<th>il-lettra</th>
<th>&quot;Pawlu wrote the letter&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pawlu</td>
<td>write-3ms.perfect</td>
<td>def-letter</td>
<td>&quot;Pawlu writes the letter&quot;</td>
</tr>
<tr>
<td>Pawlu</td>
<td>se jikteb</td>
<td>il-lettra</td>
<td>&quot;Pawlu is going to write the letter&quot;</td>
</tr>
</tbody>
</table>
Tense/aspect Analysis

⇒ Select elements from common tense hierarchy
  - past, future, present
⇒ Define types in section “viewpoint aspect”
  - imperfect, subtype of aspect
  - perfect, subtype of aspect
  - progressive, subtype of imperfect
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NP and VP Coordination

Noun phrases and verb phrases can be coordinated using the word *u*. The coordinator stands in between the coordinands.

- Pawlu *u* Norma h –areg. – “Pawlu and Norma left.” based on (?)
- Pawlu kiel ilmazzita *u* h –areg. – “Pawlu ate the blutwurst and left.” based on (?)
The marking pattern of Maltese coordinated structures is either **monosyndeton** (A B and C)

⇒ Select ‘monosyndeton’ marking pattern (or ‘polysyndeton’)

⇒ Select marked by

- a word
- spelled “u”
- that comes before the coordinand
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Noun inflection

Common nouns can be marked for number and definiteness

⇒ Define two slots:

- The obligatory slot ‘number’, appearing after noun-type2 and noun-type3, with morphemes
  - *jiel* marking plural
  - a phonologically empty morpheme (leaving spelling blank) to indicate ‘singular’

- The optional slot ‘definite’, appearing before noun-type2, noun-type3 or the number slot
Aside Non-trivial Phenomena in Inflection

For some inflection phenomena, it is non-trivial how to capture them with the system. E.g.:

- Morphemes appearing in the same position with different syntactic properties
- Circumfixes
A circumfix can be handled by the system, if it is defined as two morphemes:

1. Define a slot (slot1) for the part of the circumfix that precedes the stem
2. Define a slot (slot2) for the part of the circumfix that follows the stem
3. Add a constraint to slot1 that slot2 is required, and vice versa
Different syntactic constraints within slot?

In Turkish, the paradigm for subject agreement depends on the TAM-morpheme preceding it:

<table>
<thead>
<tr>
<th>stem...</th>
<th>-dI/-sE</th>
<th>paradigm1</th>
</tr>
</thead>
<tbody>
<tr>
<td>stem...</td>
<td>-mEl/-mIs/...</td>
<td>paradigm2</td>
</tr>
</tbody>
</table>

Intuitively, we would define a single slot for the TAM-morphemes, and one for the agreement morphemes.

This grammar would over-generate: the wrong agreement marker may be used.
Defining Separate Slots

Solution: define 4 slots rather than two

1. Define two slots for the final TAM-morpheme
2. Forbid the slots to co-occur
3. Do the same for the agreement morphemes
4. TAM-slot 1 will require agreement from slot 3
5. TAM-slot 2 will require agreement from slot 4

<table>
<thead>
<tr>
<th></th>
<th>slot 1</th>
<th>slot 2</th>
<th>slot 3</th>
<th>slot 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>stem</td>
<td>-dl/-sE</td>
<td>—</td>
<td>AGR1</td>
<td>—</td>
</tr>
<tr>
<td>stem</td>
<td>—</td>
<td>-mls/mEli/...</td>
<td>—</td>
<td>AGR2</td>
</tr>
</tbody>
</table>

Bender & Fokkens

U. Washington & U. Saarlandes
Bibliography I

