Day 1
Using annotated corpora for linguistic research

Trevor Johnston
Centre for Language Sciences
Department of Linguistics
Macquarie University
Sydney, Australia

SLCN Workshop 3: Annotation of sign language corpora

Workshop, not training course
Share experiences & discuss rather than teach
Outline Day 1

- Introduction
  - Corpus linguistics
  - SL corpus linguistics
- Creating an annotated corpus
  - tiers and templates
  - levels of data processing
- Auslan Corpus annotation conventions (part 1)
  - for primary processing
- Using an annotated corpus
  - linguistic research and primary processing (examples)

References


Linguistic atheism
&
corpus linguistics

The lexico-grammar of language ‘x’

Core lexico-grammar

Privileged lexico-grammar

Individual 1

Individual 2

Individual 3
The lexico-grammar of language ‘x’

- **Social group 1**
  - Core lexico-grammar
  - Privileged lexico-grammar

- **Social group 2**

- **Social group 3**

- Low social status
- Middle social status
- Upper social status
The lexico-grammar of language ‘x’

planned language

Core lexico-grammar

Privileged lexico-grammar

magical ritual sacred formulaic language

unplanned language

The lexico-grammar of language ‘x’

small urban

Core lexico-grammar

Privileged lexico-grammar

court capital metropolis

rural
The lexico-grammar of language ‘x’

Literate

Core lexico-grammar

Privileged lexico-grammar

Elite literate teachers/scholars

Illiterate

formal spoken language

Core lexico-grammar

Privileged lexico-grammar

written language

casual spoken language
The case for SL corpus linguistics

Characteristics
- SL using communities
  - minority communities
  - no real location
  - interrupted inter-generational transmission
  - few native signers
  - no written form

Consequences
- intuitions less useful
  - high degree of variation
  - norms ‘less-established’
- ad-hoc glossing
  - idiosyncratic
  - token/type confusion
  - inaccessible primary data
- corpora needed not just to compensate, but to enable!
The case for SL corpus linguistics

• What do we want to do?
• Why do we want to do it?
• How do we do it?

What do we want to do?

• empirically ground SL description
• validate previous research
• generate new observations
• document linguistic community
• create teaching/learning resources
Why do we want to do it?

- no easily or commonly used written form
- lack of language documentation
  - cf. preservation
- language endangerment
  - cf. maintenance, revitalization
- limits to intuitions and introspection
- unique usage/acquisition environments
- difficult for learners to gain exposure

How do we do it?

- create language archives
  - i.e., documentary linguistics
- adopt a corpus-based approach
- value-add to language archives using
  - multi-media annotation software
  - annotation, not necessarily transcription
  - controlled gloss-based annotations (ID-glosses)
  - systematic linguistic tagging
- open access for researchers and community
  - learners and teachers
Annotation, not necessarily transcription

Notation: more or less a symbol system

Transcription: more or less a writing system

Annotation: something appended to text

Tagging: codes appended to text

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Templates

- Core tiers
  - common to all annotation files in a corpus
  - minimum set?
- Fixed tiers?
  - all corpus files in the same set-up
- Study specific tiers
  - research questions
    - e.g., aspect
  - temporary & derived data
    - co-occurrence information
    - annotations from overlapping annotations

Tiers & templates 1

<table>
<thead>
<tr>
<th>Parent tier</th>
<th>Expanded name</th>
<th>Linguistic type</th>
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<tbody>
<tr>
<td>RH-IDgloss</td>
<td>Gloss</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>RH-Mean</td>
<td>Meaning</td>
<td>BasicTag</td>
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<tr>
<td>RH-GramCls</td>
<td>Grammatical class</td>
<td>GramCls</td>
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<td>RH-Transcrip</td>
<td>Transcription</td>
<td>BasicTag</td>
</tr>
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<td>RH-Handsh</td>
<td>Handshape</td>
<td>BasicTag</td>
</tr>
<tr>
<td>RH-Orient</td>
<td>Orientation</td>
<td>BasicTag</td>
</tr>
<tr>
<td>RH-Loc</td>
<td>Location</td>
<td>BasicTag</td>
</tr>
<tr>
<td>RH-Move</td>
<td>Movement</td>
<td>BasicTag</td>
</tr>
<tr>
<td>RH-NonMan</td>
<td>Other non-manuals</td>
<td>BasicTag</td>
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<tr>
<td>RH-OtherPhon</td>
<td>Other phonetic/phonological</td>
<td>BasicTag</td>
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<tr>
<td>RH-ModOrVar</td>
<td>Citation modification or variation</td>
<td>ModOrVar</td>
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<tr>
<td>RH-Freq</td>
<td>Lexical frequency</td>
<td>BasicTag</td>
</tr>
<tr>
<td>RH-Caco</td>
<td>Co-occurrence of sign with CA</td>
<td>BasicTag</td>
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</tbody>
</table>
## Tiers & templates 2

<table>
<thead>
<tr>
<th>Clause</th>
<th>Clause dependency; complement, embedded, subordinate clauses</th>
<th>BasicAnnotation</th>
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</thead>
<tbody>
<tr>
<td>RH-Arg</td>
<td>Argument identification</td>
<td>ClauseArguments</td>
</tr>
<tr>
<td>RH-MacroR</td>
<td>Macro-role of argument</td>
<td>MacroRoles</td>
</tr>
<tr>
<td>RH-SemR</td>
<td>Semantic role of argument</td>
<td>SemanticRoles</td>
</tr>
<tr>
<td>RH-overtSUBJ?</td>
<td>Overt subject?</td>
<td>overtSUBJ?</td>
</tr>
<tr>
<td>LH-Arg</td>
<td>Argument identification</td>
<td>Arguments</td>
</tr>
<tr>
<td>LH-MacroR</td>
<td>Macro-role of argument</td>
<td>MacroRoles</td>
</tr>
<tr>
<td>LH-SemR</td>
<td>Semantic role of argument</td>
<td>SemanticRoles</td>
</tr>
<tr>
<td>LH-overtSUBJ?</td>
<td>Overt subject?</td>
<td>overtSUBJ?</td>
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</table>

## Tiers & templates 3

<table>
<thead>
<tr>
<th>CA</th>
<th>Constructed action or constructed dialogue</th>
<th>BasicAnnotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Body</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>Face</td>
<td>Global description of facial expression</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>Head</td>
<td>Head movements</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>Gaze</td>
<td>Direction of eye-gaze</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>Eye&amp;Brow</td>
<td>Eye and brow movements</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>Mouthing</td>
<td>Mouthing (of words)</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>MouthingGCI</td>
<td>Grammatical class of mouthed English word</td>
<td>GramCls</td>
</tr>
<tr>
<td>MouthGestF</td>
<td>Mouth gestures form</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>MouthGestM</td>
<td>Mouth gestures meaning</td>
<td>BasicTag</td>
</tr>
<tr>
<td>FreeTransl</td>
<td>Free translation</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>LitTransl</td>
<td>Literal translation (clause based)</td>
<td>BasicAnnotation</td>
</tr>
<tr>
<td>Comments</td>
<td>Comments</td>
<td>BasicAnnotation</td>
</tr>
</tbody>
</table>
Primary processing

• Free translation
  – written (preferable as minimum)
    • spoken is a bonus (potentially quicker), but
    • written is immediately searchable (as we have seen)

• Tokenization of the signing stream
  – identify and gloss
  – discriminate types of signs
Secondary processing

- annotations/tags vs ‘glossing’
  - phonological
  - morphological
  - syntactic
  - semantic
  - pragmatic
  - discourse

- constrain searches
  - vertically (tier values)
  - horizontally (environment)
  - domain/metadata

Tertiary processing

- using the corpus to enrich the corpus by
  - implementing primary and secondary processing
  - conducting searches based on primary and secondary processing
  - incorporating these findings into existing annotations
- conducting subsequent searches using the newly incorporated annotations as constraints
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Annotation conventions for primary processing

- Tokenization & glossing tier(s)
  - RH/LH annotations
  - Fully-lexical signs
  - Partly-lexical signs
  - Non-lexical signs
    - Indecipherable signs
  - Tokenization and sign duration
RH/LH annotations

- ECHO project
- some redundancy but necessary
  - switching hand dominance
  - simultaneous constructions
- ambidextrous signers
- dominant-hand statistics reliable approximation

Fully-lexical signs

- IDglosses & databases
- Variants
- One-handed vs two-handed forms
- Numbers & digits
- Negative incorporation
- Sign names
- Signed English & other foreign borrowings
Partly-lexical signs

• Pointing signs
  – pronominals
  – locatives
  – determiners
  – demonstratives

• Depicting signs
  – subcategories
  – one or two glosses (RH/LH problem)

• Buoys

Pointing signs

(22) **PT:PRO** = sign that points to a referent/participant,
i.e. functions as a pronoun (e.g. ‘he’, ‘they’)

(23) **PT:LOC** = sign that points to a location,
i.e. functions as a locative adverb or locative predicate
(e.g. ‘here’, ‘there’)

(24) **PT:LOC/PRO** = sign that points to a referent/participant/location,
i.e. functions as a pronoun and locative and it appears impossible to
prioritize or separate either of these two meanings
(e.g. ‘he, there’, ‘they, there’, ‘it, here’)

(25) **PT:DET** = sign that specifies a present or previously mentioned
referent, and usually names the referent again at the time of pointing
(either before or after the point or simultaneously with the point)
i.e. functions as a ‘determiner’ (e.g. ‘the’ man, ‘this’ man) by
making it definite in some way.

**PT:PRO1**  **PT:PRO1SG**  **PT:PRO1SG(B)**
Depicting signs

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSL</td>
<td>Depicting Sign: Location</td>
<td>Depicts the location of entities</td>
</tr>
<tr>
<td>DSS</td>
<td>Depicting Sign: Size and shape</td>
<td>Depicts the size and shape of entities</td>
</tr>
<tr>
<td>DSM</td>
<td>Depicting Sign: Movement or displacement</td>
<td>Depicts the movement or displacement of entities</td>
</tr>
<tr>
<td>DSH</td>
<td>Depicting Sign: Handling</td>
<td>Depicts the handling of an object</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSG</td>
<td>Depicting Sign: Ground</td>
<td>Depicts the ‘ground’ (or point of departure) of a movement or trajectory which is depicted with the other hand (may also be metaphorically a temporal ground and a temporal movement)</td>
</tr>
</tbody>
</table>

Depicting signs (2)

(36) RH-IDgloss PRO1SG DSH(C):CUP-ON-FLAT-SURFACE DSS(B):FLAT-SURFACE

(37) RH-IDgloss HAVE DSS(C):CUP-ON-FLAT-SURFACE DSS(B):FLAT-SURFACE
Non-lexical signs

- Manual gestures
- Non-manual gestures
- Fingerspelling

Manual gestures

(56) G:HOW-STUPID-OF-ME not G:HIT-PALM-ON-FOREHEAD
Non-manual gestures

(57) IDGLOSS    PT:PRO3SG   LOOK   G(NMS):SUDDENLY-REALISE-IN-DISTRESS   DEAD
         CA        shepherding
Face
MouthGesture

(58) IDGLOSS  YES   M:BUT   PRO2SG   NEG   DELIBERATE
         Mouthing but____
         MouthGesture pah____
         FreeTransl

Yes, but he didn’t do it deliberately.

(59) IDGLOSS  YES   MG:POUT   PERHAPS   PT:PRO2SG   RIGHT
         MouthGesture pout____
         FreeTransl

Yes, [pouting-in-disinclination] perhaps you’re right.

Fingerspelling

FS:WORD
FS:WORD(WOR)   not   FS:WOR
FS:WORD(WRD)   not   FS:WRD
FS:SO(SI)      not   FS:SI
FS:TOO(TO)     not   FS:TO
Tokenization & sign duration

- Echoing, anticipation & perseveration
- Repetition or reiteration
- Compounds & collocations

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Some uses of primary processing

- total number/frequency of sign tokens
  - sign type frequency
  - IDgloss (‘lemma’) frequency
- average duration of sign types
- concordance & collocation patterns
- typical translation equivalents
  - search written translations, compare with original signed text at approximately the same time interval
- ability to constrain searches by specifying domains and/or using metadata links

Sign type frequency

Exploiting distinctions made possible through the implementation of IDglossing conventions

- search all IDgloss annotations on dominant hand (^, or .+, etc.)
- search for sub-type searches for partly- or non-lexical signs
  - points (^PT), depicting signs (^DS), gestures (^G:), fingerspellings (^FS)
- view hits in frequency view for statistics
  - export and sort if desired or conduct sub-searches
+. on RH-IDgloss tier

<table>
<thead>
<tr>
<th>Annotation</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE:PROSSG</td>
<td>3.98%</td>
<td>1650</td>
</tr>
<tr>
<td>G:WELL</td>
<td>2.03%</td>
<td>380</td>
</tr>
<tr>
<td>PE:PROSSG</td>
<td>1.94%</td>
<td>827</td>
</tr>
<tr>
<td>DEAF</td>
<td>1.41%</td>
<td>617</td>
</tr>
<tr>
<td>LOOK</td>
<td>1.31%</td>
<td>566</td>
</tr>
<tr>
<td>BOY</td>
<td>1.17%</td>
<td>497</td>
</tr>
<tr>
<td>SAME</td>
<td>1.10%</td>
<td>407</td>
</tr>
<tr>
<td>PE:LOC</td>
<td>1.04%</td>
<td>454</td>
</tr>
<tr>
<td>HAVE</td>
<td>1.02%</td>
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</tr>
<tr>
<td>PE:DEY</td>
<td>0.91%</td>
<td>377</td>
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<tr>
<td>PE:PROSSG</td>
<td>0.79%</td>
<td>335</td>
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<tr>
<td>THINK</td>
<td>0.77%</td>
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</tr>
<tr>
<td>NOTHING</td>
<td>0.74%</td>
<td>322</td>
</tr>
<tr>
<td>GOOD</td>
<td>0.73%</td>
<td>311</td>
</tr>
<tr>
<td>WHAT</td>
<td>0.68%</td>
<td>291</td>
</tr>
<tr>
<td>WHY</td>
<td>0.66%</td>
<td>291</td>
</tr>
<tr>
<td>REAL</td>
<td>0.63%</td>
<td>278</td>
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<tr>
<td>NOT</td>
<td>0.61%</td>
<td>277</td>
</tr>
<tr>
<td>PEOPLE</td>
<td>0.62%</td>
<td>266</td>
</tr>
<tr>
<td>ONE</td>
<td>0.62%</td>
<td>263</td>
</tr>
</tbody>
</table>
PTs compared with other signs in discourse

- **Lexical signs**: 63%
- **Fingerspelling**: 5%
- **Gestures**: 8%
- **Points**: 12%
- **Depicting signs**: 12%

<table>
<thead>
<tr>
<th>Annotation</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>DEAF</td>
<td>2.14%</td>
<td>627</td>
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<tr>
<td>LOOK</td>
<td>2.21%</td>
<td>588</td>
</tr>
<tr>
<td>BOY</td>
<td>1.99%</td>
<td>497</td>
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<tr>
<td>SAME</td>
<td>1.77%</td>
<td>467</td>
</tr>
<tr>
<td>HAVE</td>
<td>1.67%</td>
<td>494</td>
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<tr>
<td>THINK</td>
<td>1.24%</td>
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<td>NOTHING</td>
<td>1.2%</td>
<td>122</td>
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<tr>
<td>GOOD</td>
<td>1.19%</td>
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<td>WHY</td>
<td>1.07%</td>
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<tr>
<td>REAL</td>
<td>1.06%</td>
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<tr>
<td>NOT</td>
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<tr>
<td>PEOPLE</td>
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<td>296</td>
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<tr>
<td>ONE</td>
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<td>SIGN</td>
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<tr>
<td>WITH</td>
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<td>255</td>
</tr>
<tr>
<td>FROG</td>
<td>0.94%</td>
<td>255</td>
</tr>
<tr>
<td>DOG</td>
<td>0.93%</td>
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</tr>
<tr>
<td>SAY</td>
<td>0.90%</td>
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</tr>
<tr>
<td>IN</td>
<td>0.88%</td>
<td>187</td>
</tr>
</tbody>
</table>
Distribu:on of signs by type & text type

Engberg-Pedersen (2003) “one in four signs is a point” (25%)

<table>
<thead>
<tr>
<th>Text Type</th>
<th>Lexical Signs</th>
<th>Fingerspelling</th>
<th>Gestures</th>
<th>Points</th>
<th>Depicting Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retell</td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview</td>
<td></td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative</td>
<td></td>
<td>16%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Corpus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>N=50,000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Important note: This is not a formal presentation of findings. The data are incomplete. They are from work in progress and are being used here merely to show what can be done using current corpus resources. A formal report is pending.

IDgloss (‘lemma’) frequency

- search for all IDgloss annotations on the dominant hand, excluding partly- or non-lexical signs
- view hits in frequency view
- export and sort further if desired
Once again: this is only made possible by the systematic identification of, and distinctions between, sign types made through the implementation of IDglossing conventions.

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Concordance & collocation patterns
<table>
<thead>
<tr>
<th>IDgloss</th>
<th>Perfective study gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINISH1</td>
<td>FINISH-FIVE</td>
</tr>
<tr>
<td>FINISH2</td>
<td>FINISH-GOOD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IDgloss</th>
<th>Perfective study gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>MESS</td>
<td>FINISH-GOOD PT.PROSIG</td>
</tr>
<tr>
<td>MORNING</td>
<td>FINISH-GOOD ALL-DAY LON</td>
</tr>
<tr>
<td>AFTERNOON</td>
<td>FINISH-GOOD NEXT</td>
</tr>
<tr>
<td>WANT</td>
<td>FINISH-GOOD EAST-GOOG</td>
</tr>
<tr>
<td>LASTHR</td>
<td>FINISH-GOOD PT.PROSIG</td>
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<tr>
<td>PT.PROSIG</td>
<td>FINISH-GOOD RESOLUT</td>
</tr>
<tr>
<td>PEOPLE</td>
<td>FINISH-GOOD-2H FS-VCE</td>
</tr>
<tr>
<td>NOTHING</td>
<td>FINISH-GOOD-2H FS-VCE</td>
</tr>
<tr>
<td>NAUSEA</td>
<td>FINISH-GOOD GET-LOST</td>
</tr>
<tr>
<td>WHEN</td>
<td>FINISH-GOOD-2H THROW-OUT</td>
</tr>
<tr>
<td>BETTER</td>
<td>FINISH-GOOD-2H INTERCOSE</td>
</tr>
<tr>
<td>SAME</td>
<td>FINISH-GOOD-2H INTERCOSE</td>
</tr>
<tr>
<td>INTERCOSE</td>
<td>FINISH-GOOD-2H REMOVE EMERG</td>
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<td>SCHOOL</td>
<td>FINISH-GOOD-2H SOME</td>
</tr>
<tr>
<td>PT.PROSIG</td>
<td>FINISH-GOOD-2H MEE</td>
</tr>
<tr>
<td>PT.PROSIG</td>
<td>FINISH-GOOD-2H G-Separate</td>
</tr>
<tr>
<td>FS-VCE</td>
<td>FINISH-GOOD NEXT</td>
</tr>
<tr>
<td>PT.PROSIG-2H</td>
<td>FINISH-GOOD SCHOOL</td>
</tr>
<tr>
<td>G-NO-IDEA</td>
<td>FINISH-GOOD SAM</td>
</tr>
<tr>
<td>SCHOOL</td>
<td>FINISH-GOOD-2H AUTOMATIC-2H</td>
</tr>
<tr>
<td>SCHOOL</td>
<td>FINISH-FIVE G-LOST</td>
</tr>
<tr>
<td>SCHOOL</td>
<td>FINISH-FIVE-2H REC</td>
</tr>
<tr>
<td>COCHLEAR-IMPLANT</td>
<td>FINISH-GOOD-2H RECOME</td>
</tr>
<tr>
<td>RIGHT</td>
<td>FINISH-FIVE FINISH-FIVE</td>
</tr>
<tr>
<td>FINISH-FIVE-2H G-NO-IDEA</td>
<td>FINISH-FIVE G-GET-ATTENTION</td>
</tr>
<tr>
<td>EVERYTHING</td>
<td>FINISH-GOOD-2H CONT</td>
</tr>
<tr>
<td>CHI</td>
<td>FINISH-FIVE PT.PROSIG</td>
</tr>
</tbody>
</table>
Collocation or compound: DEAF CLUB?

Domain: 281 eaf files

Query History:  

Mode: N-gram over annotations ➕ case insensitive ➕ substring match ➕

Find: deaf club

Tier Name: RH-IDgloss

#hits: 9  
#annotations with a hit: 9  
#annotations investigated: 140217

1 of 9

DISAPPOINTED WITH DEAF CLUB NOT PROVIDE  
PRESENT FROM DEAF CLUB PT-PROSG REAL  
OBJECT PT:LOC DEAF FS:CLUB OBJECT PT:PROSG  
FS:TO PT:DET DEAF FS:CLUB PT:LOC WHEN  
DEAF DEAF DEAF CLUB DEAF COMMUNITY  
DIFFERENT PT:LOCPI DEAF CLUB PT-PROSG:CH FINISH-FIVE  
HAVE PT:PROSG:PL DEAF FS:CLUB PT:PROPL HAVE  
PT:PROSG GO DEAF FS:CLUB FIVE FS:ELIZ

31
Phonology: handshape assimilation

- PT:PRO
  - when default 1 handshape is overridden

Search for
\(^{PT:PRO}.+?\)
In what environments is PT:PRO1 1 handshape replaced by B handshape?

Search for ^PT:PRO1.+?\(B
6/29/10

PT:PROISG(7) WANT PT:PROISG(B) IN G: THERE-YOU-GO
TORTOISE GET-ATTENTION PT:PROISG(B) KNOW WANT
STUPID KNOW NOT-2H PT:PROISG(B) GET-LOST G: WELL
WOLF G:WELL PT:PROISG(B) ENOUGH
EAT GRASS PT:PROISG(B) HERE G:WELL PT:PROISG(B) USING-COOK-TO-HERD
SEE G:WELL PT:PROISG(B) WIN RABBIT
SLEEP-2H G: don't worry-about-it PT:PROISG(B) GOOD SLEEP-2H
DS(5) TURTLE-STAND KNOW PT:PROISG(B) ALWAYS SLOW
ALWAYS SLOW PT:PROISG(B) KNOW G:WELL
AUSTRALIA NOT-YET PT:PROISG(B) OVERSEAS PT:PROISG(B)
PT:PROISG(B) HAVE CAR
NICE CAR PT:PROISG(B) DS(5) parked-car ALRIGHT
SCREAM G:WELL PT:PROISG(B) DEAF M:CANT
PANIC WHAT PT:PROISG(B) PATIENCE STAND
TELEPHONE G:WELL PT:PROISG(B) DEAF G:WELL(1)
ALWAYS CHRISTMAS PT:PROISG(B) REAL DISAPPOINTED
STILL WORK PT:PROISG(B) CONTINUE STOP
DEPEND-ON SIXTY-YEARS-OLD PT:PROISG(B) DON'T KNOW TIME-GOES-BY
AMERICA HELP PT:PROISG(B) PT:PROISG(1) PT:PROISG(B)
PT:PROISG(B) PAST ONE
WANT NOT PT:PROISG(B) DRIVE WANT
Translation ‘equivalents’

- How is conditional marked?
  - non-manual brow raise?
  - lexical ‘if’
  - what order the clauses?
- no marking
  - context only

Search for \bif\b
Translation ‘equivalents’

• How is conditional marked?
• Is negation of KNOW
  – suppletive negative incorporation (KNOW- NOT)?
  – lexical NEG KNOW (or KNOW NEG)?
  – non-manual, i.e. with headshake?

Search for “n’t know”
End Day 1

Day 2 morpho-syntactic research
i.e., secondary and tertiary processing