Corpus informed lexicography: a decade of exploration

Rachel McKee & David McKee

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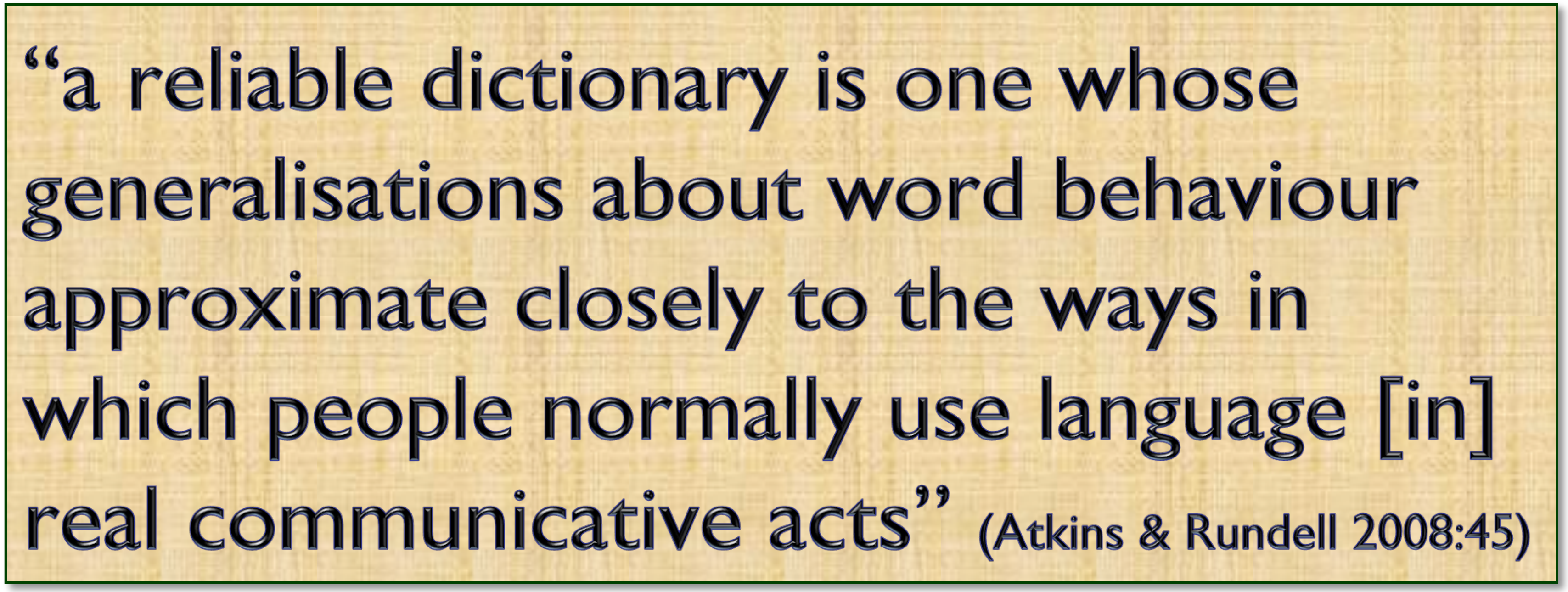
Victoria
UNIVERSITY OF WELLINGTON
Te Whare Wānanga
o te Ūpoko o te Ika a Māui



"a reliable dictionary is one whose generalisations about word behaviour approximate closely to the ways in which people normally use language [in] real communicative acts" (Atkins & Rundell 2008:45)

Reliability depends on the kind of **evidence** underpinning a dictionary

–**Citations (from texts)** are usual form of evidence for creating conventional dictionary entries

–**Introspection & informant testing** - common source of evidence for unwritten languages: a ***subjective*** basis

1992 Dictionary of NZSL

- Editor Graeme Kennedy: non-signer, with lexicography & corpus expertise

  ∴ ***DNZSL should have empirical, descriptive basis***

- 'Concept net' design - capture topics and concepts common to most languages

- Video-recorded NZSL discussion groups on these topics > a corpus for describing lexicon
  - 4,500 signs (incl. variants) in dictionary

1997 – Concise Dictionary
Which 2,000 signs to include?

Zipf's law: words are used (distributed) with different frequencies

- A few words account for a high % of any text.
- eg, 100 English words = 45% of 100 million words in British National Corpus

Need to reliably identify most frequent signs for concise dictionary

Wellington Corpus of NZSL compiled

- 40 hours of tape: dictionary + other recordings
- 80 Deaf people, age 18-60
- Range of topics; dialogue & monologue
- Gloss transcription (not annotated)
- Took 1 year, 1 person full-time
- **100,000** running signs

IX-2 KNOW IX-2 FAMOUS HORSE IX-loc AUSTRALIA IX-loc 1 MAN FROM HERE HORSE-TROTTING NAME fs-SHANUE fs-DYE PRAM KNOW IX-2 FAMOUS IX-3 MELBOURNE MELBOURNE CUP MELBOURNE CUP WIN FIRST SCL-1-horse-leads FIRST 3 YEAR PAST 3 YEAR PAST IX-3 POS1 FRIEND IX-3 IX-1 LONG-TIME-AGO SMALL-CHILD IX-3 FATHER IX-3 fs-WAS POS1 FRIEND IX-3 IX-1 IX-3 NMS-nod IX-3 IX-3 BORN IX-3 IX-3 FATHER SISTER IX-3 FAMILY AREA OLD GOOD TOGETHER GOOD EACH-OTHER IX-3 IX-3 fs-SON IX-3 GROW-UP MELBOURNE FAMOUS HORSE CUP IX-3 GOOD IX-3 NOW GOOD AREA AUSTRALIA HORSE COMPETE GOOD POS3 FATHER POS3 SISTER IX-3 IX-1 LEARNER-LICENCE KISS NOW IX-3 LEARNER-LICENCE IX-1 IX-3 TEACH-me IX-1 LEARNER-LICENCE WELL WHEN GROW-UP LATE 12 13 DEAF LIVE MOVE NOW HOUSE MAORI WITH IX-1 CLASS IX-1 IX-3 IX-1 IX-3 GOOD IX-3 CHILDREN 8 CHILDREN 8 CHILDREN 8 MAORI 8 CHILDREN WOW 1 FROM 1 DEAF IX-3 FATHER-MOTHER GOOD KIND-TC GIVE-me FOOD PROVIDE FOOD IX-1 EAT POS3 MAORI WAY BREAD PCL-B-heaps-of-bread CUT-BREAD […]

IX-1 SMALL-CHILD IX-3 GET-AWAY BIG-KID-2h COMPETE IX-1 ONCE SEE SOMEONE TENNIS COURT SOMEONE CATCH CRAB BOX DCL-BB-box POSSUM fs-OPOSSUM POSSUM

Distributional analysis

Used Wordsmith (concordance tool) to analyse distribution of lexical items for purposes of:

- **Concise Dictionary** content - high freq vocab
- **Teaching** – most ‘useful’ vocab to learn/teach
  - *How many & which signs are needed for everyday communication in NZSL?*

See: McKee, David & Graeme Kennedy 2006. The Distribution of Signs in New Zealand Sign Language. *Sign Language Studies* 6 (4). 372-390

Findings about types

- In 100,000 tokens (running signs)
  - 7,222 lexical types (distinct glosses)
  - Including 1,079 FS types (full & single-letter forms)
    - *2,554 tokens FS = 2.5% of corpus*
  - Polysemy & non-frozen lexicon reduce the number of lexical types in a SL corpus
    - But … large relative to the number of signs in most SL dictionaries

Coverage of corpus by types: English vs NZSL

Percent of Engl/NZSL corpus covered	by number of English Word types	by number of NZSL Sign types
25%	10 -15	**11 (= 20%)**
50 %	50 -100	**116**
70 %	--	**343**
80%	1,000 -1,500	**665**

Potentially – a learner who knows the most frequent 665 signs can access 80% of vocab in NZSL discourse - compared to a 1,000-1500 ‘basic vocab’ for English

Top 12 signs (20% of corpus)

1.	IX-1 (I, me, we, us)	6,720
2.	IX-3 (he, she, it)	3,648
3.	GOOD	1,462
4.	DEAF	1,419
5.	IX-2 (you)	1,153
6.	POS-1 (my, mine)	1,095
7.	IX-loc (there)	914
8.	ONE	677
9.	SAME	669
10.	SCHOOL	658
11.	YES	643
12.	SIGN	626

Features of NZSL lexicon

- 194 high freq concepts *not* in English top 350
- **Deaf culture themes**
  - **Communication:** DEAF, HEARING, SIGN, ORAL, EXPLAIN, PAST-MY-EYES, COMMUNICATE, SIGN-CHAT
  - **School**: TEACHER, KELSTON, BOARDER, CLASS
  - **Deaf community**: CLUB, SPORT, ASSOC'N, CL- gather
- **Verbinesss**: high % of top 350 are verbs GO,HAVE, SAY, WORK, THINK, SEE, KNOW, WANT, LOOK, FEEL
- **English influence**: 2.5% of tokens are fingerspelling: 14.9% of all types - but most are low freq items

Limitations of WCNZSL

- **Size & composition**
  - 100,000 signs large for a sign corpus (cf. Morford & Macfarlane 2003: 4,111 signs), but still small scale
  - Representativeness of topics, genres, speakers?
- Consistency of glossing (not 100% ID glosses)
- Not video linked - hard to retrieve original source
- ‘Bare’ manual lexemes only
  - No annotation of other features
- Synchronic – sample of NZSL at one point in time

Online Dictionary of NZSL project 2008-2011

- **Freelex** is an open source database application for dictionary making
- designed by Dave Moskovitz
- Download software

  http://www.matapuna.org/
- Online Dictionary of NZSL (in progress)

  http://nzsl.vuw.ac.nz/dnzsl/freelex/freelex
- Database links to a **corpus search function**

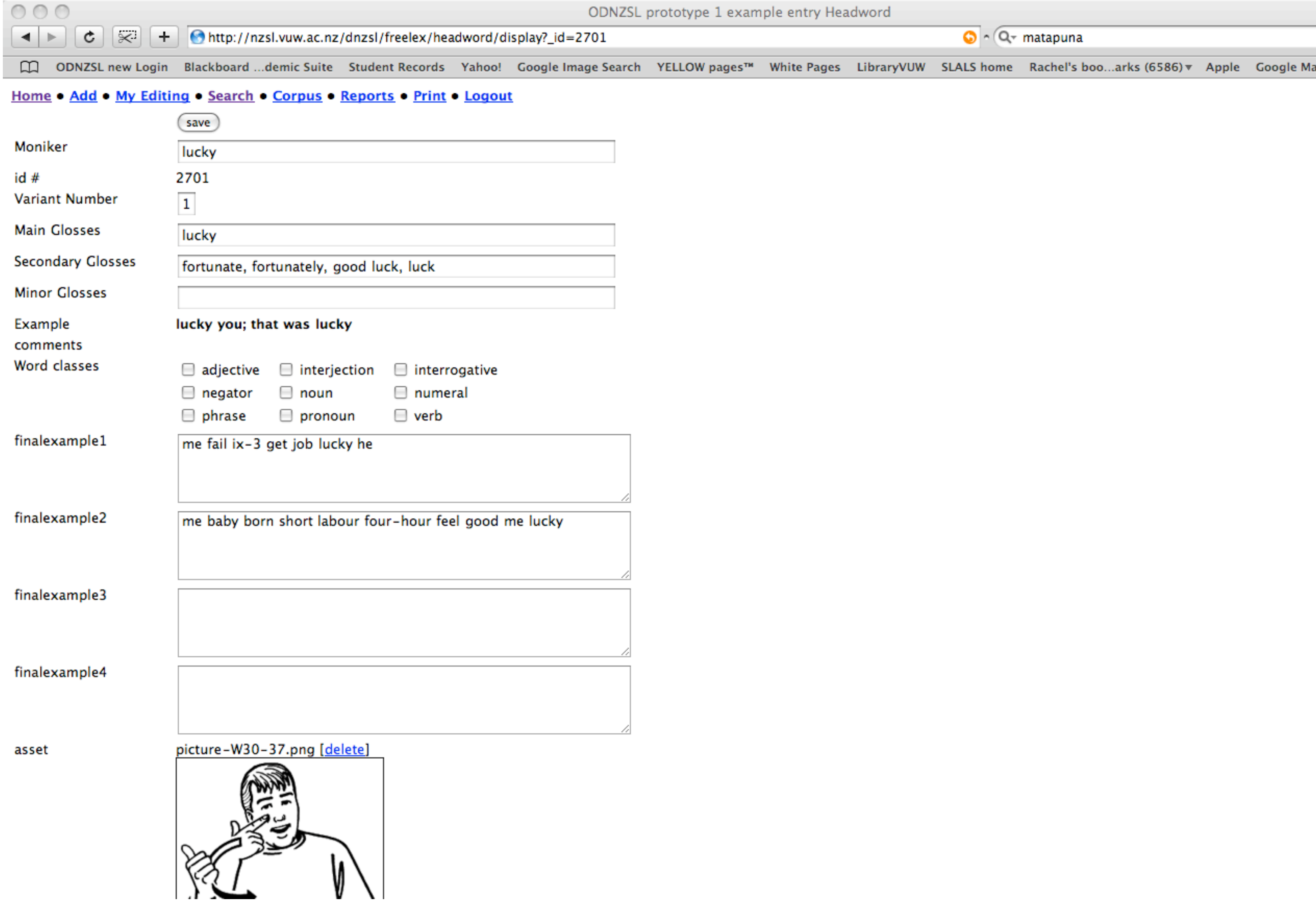
Sociolinguistic Variation archive 2005-2007

- Sample of 150 fluent NZ signers – stratified by region, age group, ethnicity, gender
  - approx. 100 hours of conversation, interview
- So far, 81 excerpts of 1-2 mins each transcribed in ELAN
  - Annotated target features for variation analysis

Extending the corpus for use in Online Dictionary

- Variation text files (from ELAN) = 14,000 signs added to Wellington Corpus.

- Now using this combined corpus in the online dictionary to inform
  - senses & usage, semantic context of signs
  - basis of example sentences
  - word class & collocation information


ODNZSL prototype 1 example entry Headword
http://nzsl.vuw.ac.nz/dnzsl/freelex/headword/display?_id=2701
matapuna
ODNZSL new Login
Blackboard ...demic Suite
Student Records
Yahoo!
Google Image Search
YELLOW pages™
White Pages
LibraryVUW
SLALS home
Rachel's boo...arks (6586)
Apple
Google Ma
Home • Add • My Editing • Search • Corpus • Reports • Print • Logout
save

Moniker	lucky
id #	2701
Variant Number	1
Main Glosses	lucky
Secondary Glosses	fortunate, fortunately, good luck, luck
Minor Glosses	
Example	**lucky you; that was lucky**
comments	
Word classes	☐ adjective ☐ interjection ☐ interrogative ☐ negator ☐ noun ☐ numeral ☐ phrase ☐ pronoun ☐ verb
finalexample1	me fail ix-3 get job lucky he
finalexample2	me baby born short labour four-hour feel good me lucky
finalexample3	
finalexample4	
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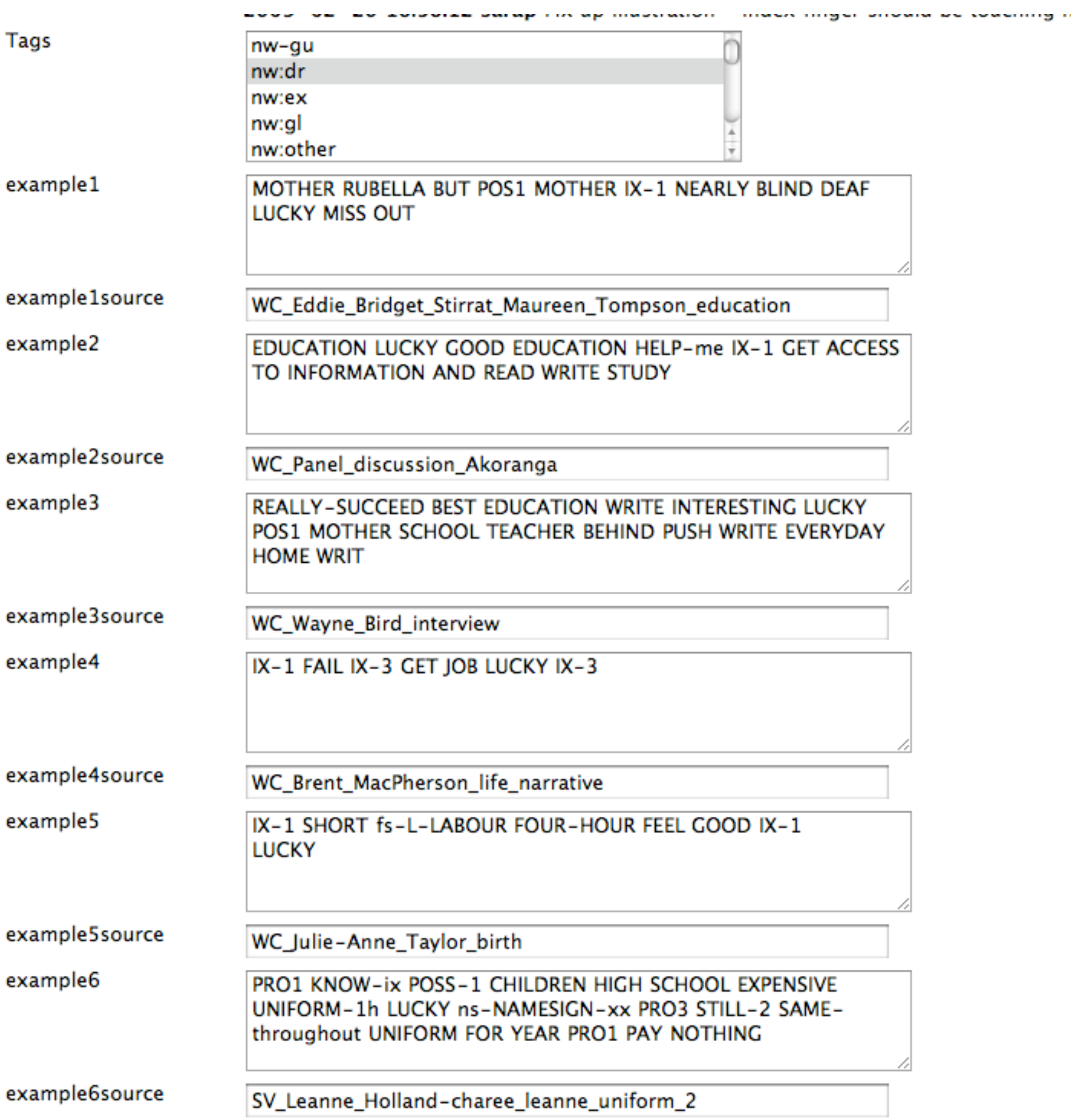
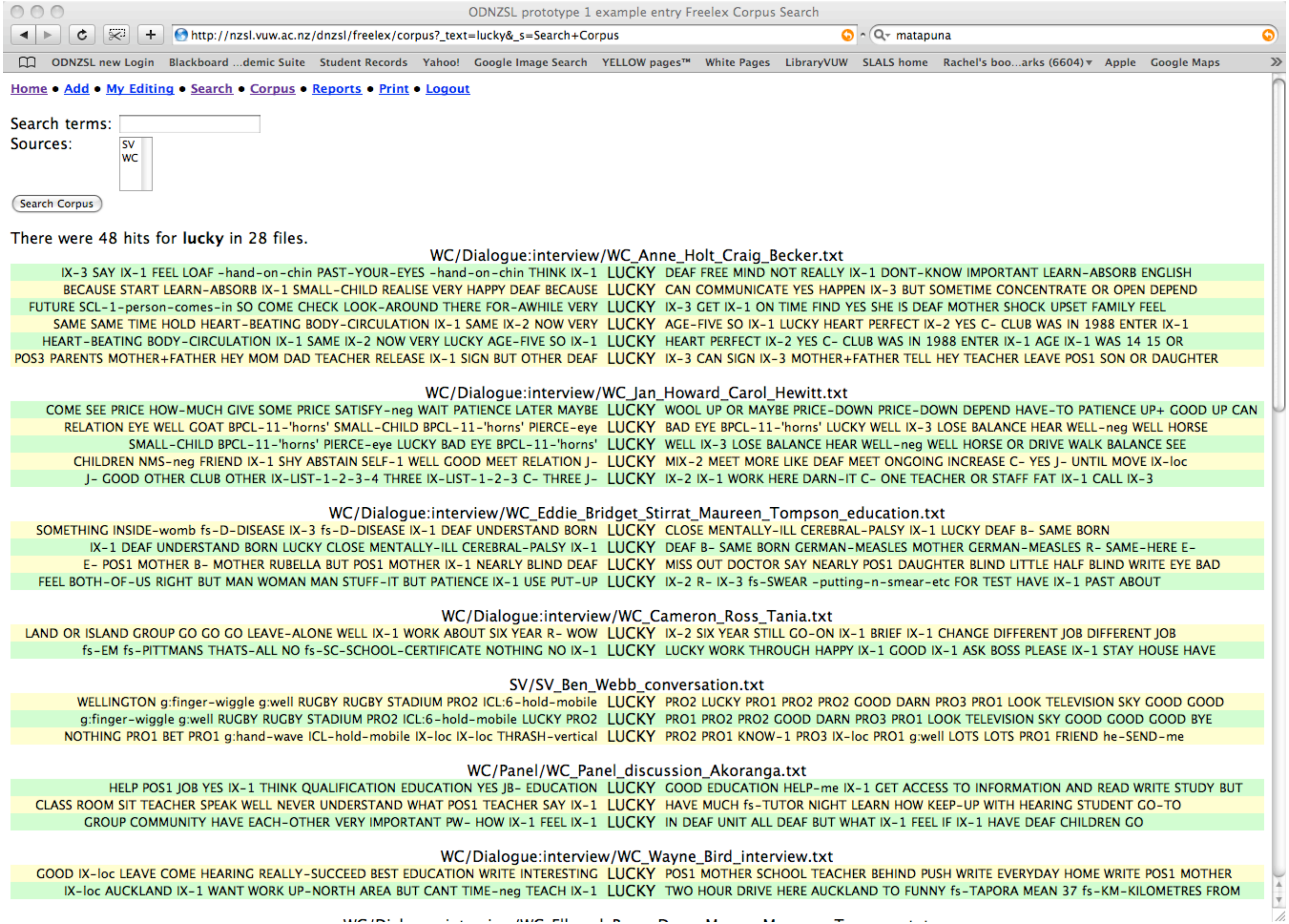


2009-02-26 16:36:12 sarap Fix up illustration - index finger should be touching

Tags	nw-gu nw:dr nw:ex nw:gl nw:other
example1	MOTHER RUBELLA BUT POS1 MOTHER IX-1 NEARLY BLIND DEAF LUCKY MISS OUT
example1source	WC_Eddie_Bridget_Stirrat_Maureen_Tompson_education
example2	EDUCATION LUCKY GOOD EDUCATION HELP-me IX-1 GET ACCESS TO INFORMATION AND READ WRITE STUDY
example2source	WC_Panel_discussion_Akoranga
example3	REALLY-SUCCEED BEST EDUCATION WRITE INTERESTING LUCKY POS1 MOTHER SCHOOL TEACHER BEHIND PUSH WRITE EVERYDAY HOME WRIT
example3source	WC_Wayne_Bird_interview
example4	IX-1 FAIL IX-3 GET JOB LUCKY IX-3
example4source	WC_Brent_MacPherson_life_narrative
example5	IX-1 SHORT fs-L-LABOUR FOUR-HOUR FEEL GOOD IX-1 LUCKY
example5source	WC_Julie-Anne_Taylor_birth
example6	PRO1 KNOW-ix POSS-1 CHILDREN HIGH SCHOOL EXPENSIVE UNIFORM-1h LUCKY ns-NAMESIGN-xx PRO3 STILL-2 SAME-throughout UNIFORM FOR YEAR PRO1 PAY NOTHING
example6source	SV_Leanne_Holland-charee_leanne_uniform_2



http://nzsl.vuw.ac.nz/dnzsl/freelex/corpus?_text=lucky&_s=Search+Corpus

Home • Add • My Editing • Search • Corpus • Reports • Print • Logout

Search terms:

Sources: SV WC

There were 48 hits for **lucky** in 28 files.

WC/Dialogue:interview/WC_Anne_Holt_Craig_Becker.txt

IX-3 SAY IX-1 FEEL LOAF -hand-on-chin PAST-YOUR-EYES -hand-on-chin THINK IX-1 LUCKY DEAF FREE MIND NOT REALLY IX-1 DONT-KNOW IMPORTANT LEARN-ABSORB ENGLISH

BECAUSE START LEARN-ABSORB IX-1 SMALL-CHILD REALISE VERY HAPPY DEAF BECAUSE LUCKY CAN COMMUNICATE YES HAPPEN IX-3 BUT SOMETIME CONCENTRATE OR OPEN DEPEND

FUTURE SCL-1-person-comes-in SO COME CHECK LOOK-AROUND THERE FOR-AWHILE VERY LUCKY IX-3 GET IX-1 ON TIME FIND YES SHE IS DEAF MOTHER SHOCK UPSET FAMILY FEEL

SAME SAME TIME HOLD HEART-BEATING BODY-CIRCULATION IX-1 SAME IX-2 NOW VERY LUCKY AGE-FIVE SO IX-1 LUCKY HEART PERFECT IX-2 YES C- CLUB WAS IN 1988 ENTER IX-1

HEART-BEATING BODY-CIRCULATION IX-1 SAME IX-2 NOW VERY LUCKY AGE-FIVE SO IX-1 LUCKY HEART PERFECT IX-2 YES C- CLUB WAS IN 1988 ENTER IX-1 AGE IX-1 WAS 14 15 OR

POS3 PARENTS MOTHER+FATHER HEY MOM DAD TEACHER RELEASE IX-1 SIGN BUT OTHER DEAF LUCKY IX-3 CAN SIGN IX-3 MOTHER+FATHER TELL HEY TEACHER LEAVE POS1 SON OR DAUGHTER

WC/Dialogue:interview/WC_Jan_Howard_Carol_Hewitt.txt

COME SEE PRICE HOW-MUCH GIVE SOME PRICE SATISFY-neg WAIT PATIENCE LATER MAYBE LUCKY WOOL UP OR MAYBE PRICE-DOWN PRICE-DOWN DEPEND HAVE-TO PATIENCE UP+ GOOD UP CAN

RELATION EYE WELL GOAT BPCL-11-'horns' SMALL-CHILD BPCL-11-'horns' PIERCE-eye LUCKY BAD EYE BPCL-11-'horns' LUCKY WELL IX-3 LOSE BALANCE HEAR WELL-neg WELL HORSE

SMALL-CHILD BPCL-11-'horns' PIERCE-eye LUCKY BAD EYE BPCL-11-'horns' LUCKY WELL IX-3 LOSE BALANCE HEAR WELL-neg WELL HORSE OR DRIVE WALK BALANCE SEE

CHILDREN NMS-neg FRIEND IX-1 SHY ABSTAIN SELF-1 WELL GOOD MEET RELATION J- LUCKY MIX-2 MEET MORE LIKE DEAF MEET ONGOING INCREASE C- YES J- UNTIL MOVE IX-loc

J- GOOD OTHER CLUB OTHER IX-LIST-1-2-3-4 THREE IX-LIST-1-2-3 C- THREE J- LUCKY IX-2 IX-1 WORK HERE DARN-IT C- ONE TEACHER OR STAFF FAT IX-1 CALL IX-3

WC/Dialogue:interview/WC_Eddie_Bridget_Stirrat_Maureen_Tompson_education.txt

SOMETHING INSIDE-womb fs-D-DISEASE IX-3 fs-D-DISEASE IX-1 DEAF UNDERSTAND BORN LUCKY CLOSE MENTALLY-ILL CEREBRAL-PALSY IX-1 LUCKY DEAF B- SAME BORN

IX-1 DEAF UNDERSTAND BORN LUCKY CLOSE MENTALLY-ILL CEREBRAL-PALSY IX-1 LUCKY DEAF B- SAME BORN GERMAN-MEASLES MOTHER GERMAN-MEASLES R- SAME-HERE E-

E- POS1 MOTHER B- MOTHER RUBELLA BUT POS1 MOTHER IX-1 NEARLY BLIND DEAF LUCKY MISS OUT DOCTOR SAY NEARLY POS1 DAUGHTER BLIND LITTLE HALF BLIND WRITE EYE BAD

FEEL BOTH-OF-US RIGHT BUT MAN WOMAN MAN STUFF-IT BUT PATIENCE IX-1 USE PUT-UP LUCKY IX-2 R- IX-3 fs-SWEAR -putting-n-smear-etc FOR TEST HAVE IX-1 PAST ABOUT

WC/Dialogue:interview/WC_Cameron_Ross_Tania.txt

LAND OR ISLAND GROUP GO GO GO LEAVE-ALONE WELL IX-1 WORK ABOUT SIX YEAR R- WOW LUCKY IX-2 SIX YEAR STILL GO-ON IX-1 BRIEF IX-1 CHANGE DIFFERENT JOB DIFFERENT JOB

fs-EM fs-PITTMANS THATS-ALL NO fs-SC-SCHOOL-CERTIFICATE NOTHING NO IX-1 LUCKY LUCKY WORK THROUGH HAPPY IX-1 GOOD IX-1 ASK BOSS PLEASE IX-1 STAY HOUSE HAVE

SV/SV_Ben_Webb_conversation.txt

WELLINGTON g:finger-wiggle g:well RUGBY RUGBY STADIUM PRO2 ICL:6-hold-mobile LUCKY PRO2 LUCKY PRO1 PRO2 PRO2 GOOD DARN PRO3 PRO1 LOOK TELEVISION SKY GOOD GOOD

g:finger-wiggle g:well RUGBY RUGBY STADIUM PRO2 ICL:6-hold-mobile LUCKY PRO2 LUCKY PRO1 PRO2 PRO2 GOOD DARN PRO3 PRO1 LOOK TELEVISION SKY GOOD GOOD GOOD BYE

NOTHING PRO1 BET PRO1 g:hand-wave ICL-hold-mobile IX-loc IX-loc THRASH-vertical LUCKY PRO2 PRO1 KNOW-1 PRO3 IX-loc PRO1 g:well LOTS LOTS PRO1 FRIEND he-SEND-me

WC/Panel/WC_Panel_discussion_Akoranga.txt

HELP POS1 JOB YES IX-1 THINK QUALIFICATION EDUCATION YES JB- EDUCATION LUCKY GOOD EDUCATION HELP-me IX-1 GET ACCESS TO INFORMATION AND READ WRITE STUDY BUT

CLASS ROOM SIT TEACHER SPEAK WELL NEVER UNDERSTAND WHAT POS1 TEACHER SAY IX-1 LUCKY HAVE MUCH fs-TUTOR NIGHT LEARN HOW KEEP-UP WITH HEARING STUDENT GO-TO

GROUP COMMUNITY HAVE EACH-OTHER VERY IMPORTANT PW- HOW IX-1 FEEL IX-1 LUCKY IN DEAF UNIT ALL DEAF BUT WHAT IX-1 FEEL IF IX-1 HAVE DEAF CHILDREN GO

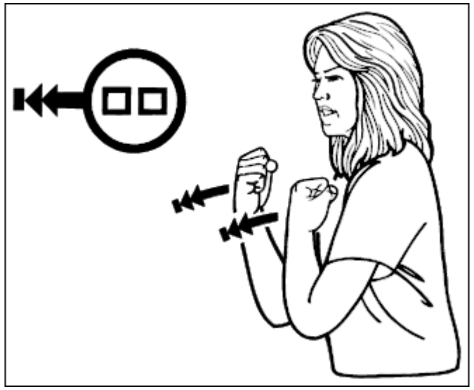
WC/Dialogue:interview/WC_Wayne_Bird_interview.txt

GOOD IX-loc LEAVE COME HEARING REALLY-SUCCEED BEST EDUCATION WRITE INTERESTING LUCKY POS1 MOTHER SCHOOL TEACHER BEHIND PUSH WRITE EVERYDAY HOME WRITE POS1 MOTHER

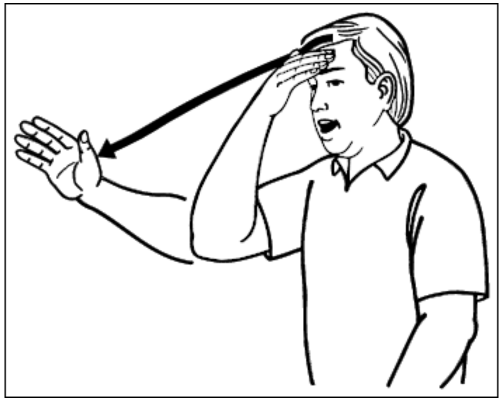
IX-loc AUCKLAND IX-1 WANT WORK UP-NORTH AREA BUT CANT TIME-neg TEACH IX-1 LUCKY TWO HOUR DRIVE HERE AUCKLAND TO FUNNY fs-TAPORA MEAN 37 fs-KM-KILOMETRES FROM

Using corpus for entry info

- Checking **senses**
  - ‘FIGHT’ - literal & metaphorical (English) senses?



- **Context, word class**
  - AFFAIR - verb/noun?
  - HOT - only with +human subject?
  - DELEGATE - mainly/only with sport?
- **Mouthing, NMF**(for filming examples)



Benefits of corpus examples

1. **Cultural relevance** of contexts

- compare *original dictionary (constructed)* examples given for LUCKY:
  - (Adj) I was lucky to win the raffle.
  - (Adv) Fortunately we missed the traffic.

  with *NZSL corpus examples*
  - MOTHER RUBELLA BUT POS1 MOTHER IX-1 NEARLY BLIND DEAF **LUCKY** MISS OUT
  - **LUCKY** GOOD EDUCATION HELP-me IX-1 GET ACCESS TO INFORMATION AND READ WRITE STUDY

2. **Show word class, collocation & syntax**

Creating usage examples from a corpus: Criteria (Atkins & Rundell)

1. Natural & Typical

word in most usual context, syntax and collocation; not idiosyncratic usage; not mixing registers or varieties

2. Informative

sentence gives informative context (helps understand sense of word)

3. Intelligible

contains no words that are more difficult than the headword; clear structure; *succinct*

Drawbacks of corpus based examples

- 50% of dictionary headwords not found in corpus:
  - headword/ gloss differences
  - limited size of corpus
- Natural utterances maybe not accessible to learners
  - Complex or fragmented structure
  - Low frequency or complex signs in sentence
  - Meaning is too contextualised (sentence can't stand alone)
  - Example doesn't reflect most 'typical' meaning
- Re-performing sentences from exact glosses not easy (for making dictionary video clips)
- ***Pragmatic compromise: corpus informed, but modified, usage examples***

References

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Contact us: rachel.mckee@vuw.ac.nz, david.mckee@vuw.ac.nz