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Extending ELAN into Quantitative Sociolinguistics

Abstract

ELAN (tla.mpi.nl/tools/tla-tools/elan, Wittenburg et al. 2006) has established itself as a valuable tool for language documentation and is frequently used for transcription and multi-tier mark-up illustrating levels of linguistic structure as well as translations and glosses. We illustrate an extension to its utility: **extracting and coding tokens of linguistic variables for quantitative analysis in the variationist sociolinguistic framework.** There are a number of benefits of this approach that can improve the way sociolinguis3tic research is conducted and which relatively easily extends the scope of language documentation and conservation work. Since ELAN is well-known in the LDC community, we focus on how it can facilitate the use of our corpora for the study of synchronic variation:

- seamless connections between recording, transcript, and coding of the dependent variable (response) and independent variables (predictors). This facilitates revision and intercoder reliability tests.
- exportability to Excel, R, Rbrul, Goldvarb, SPSS, …
- importability of transcripts from Word/text files
- complex searches and concordancing capabilities to speed up token extraction
- archivability of all mark-up related to each data file in a consistent and small-file-size format

Endangered language documentation today is dealing with synchronic variation within the speech community in greater detail than it has in the past (*cf.* Flores Farfán & Ramallo 2010). There are principled reasons for this. Grenoble argues that "More research is pressingly needed in the area of contact-induced change and language attrition," (2010: 67) and that "linguists can help educate speakers in dialect awareness, to understand that variation is the natural result of language change and is found in vital languages which are robustly spoken" (Grenoble 2010:83).

This presentation reviews the major arguments justifying this approach and provide a how-to demonstration, illustrating ELAN's functionality for variationist research with ongoing work on variation in subject pronoun presence in Faetar and N'kep, endangered languages spoken in southern Italy and Vanuatu (respectively).

Why look at variation?

Practical

- Speakers, especially of endangered languages worry about variation as an indication of loss
- "Linguists can help educate speakers in dialect awareness, to understand that variation is the natural result of language change and is found in vital languages which are robustly spoken"

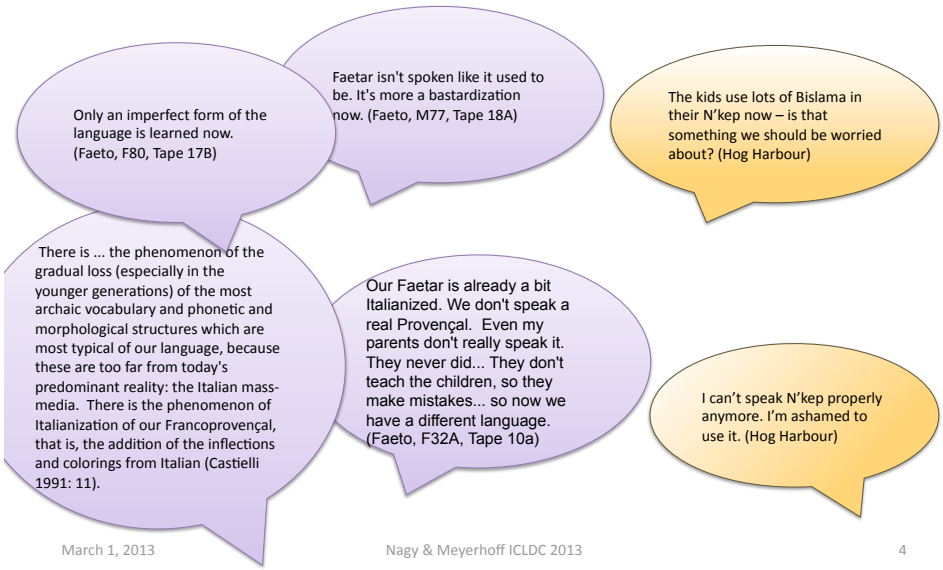
(Grenoble 2010:83).

Theoretical

- Better understand structure and behaviour of language
- "More research is pressingly needed in the area of contact-induced change and language attrition."

(Grenoble: 2010: 67)

Why look at variation?



Imperatives for studying variation in minority and endangered languages

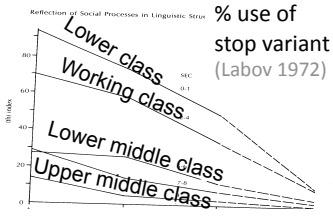
- **theoretical**: linguists acknowledge variation and its role in language change
- **practical**: it's what communities and we become aware of very quickly
- **moral/social**: it's what our speakers are interested in

How does this mesh with *your* experiences in language documentation?

- Variation exists in all languages.
- It is systematic and rule-governed.

(TH)
/ \
[θ], [ð] [t], [d]

- in a big language (English)
- phonetic
- NOT indicative of change in progress



% use of stop variant (Labov 1972)

(pro-drop)
/ \
[dʒə] Ø

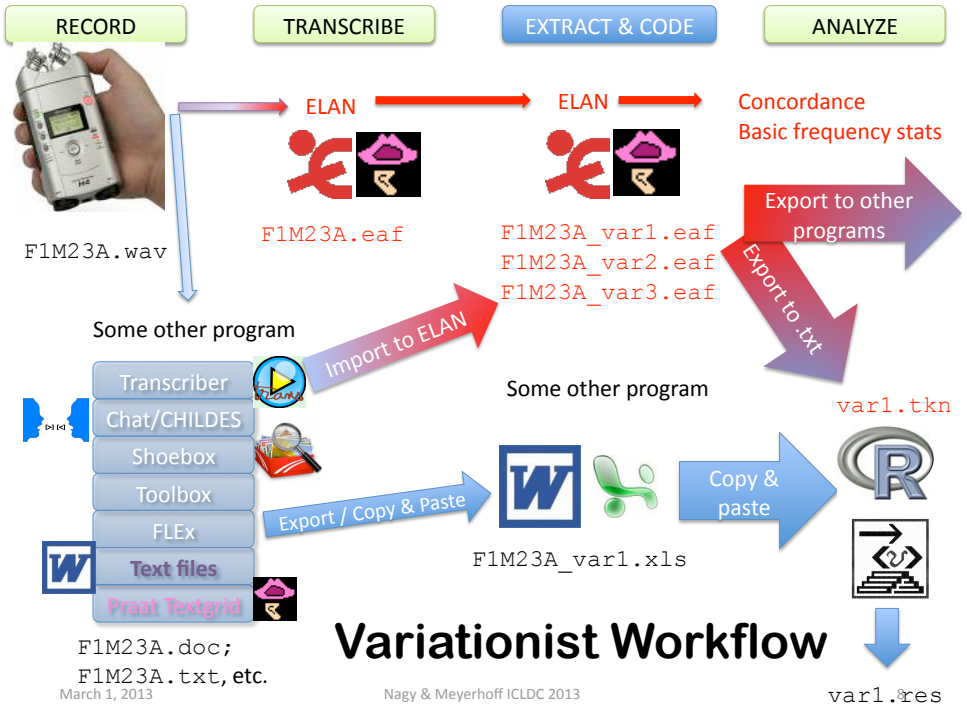
- in a small language **(Faetar)**
- morphosyntactic
- indicative of change in progress?

[tə(m)-]
/ \
indef. plural, participant?

- in a small language **(N'kep)**
- morphological
- status unclear

Two purposes of studying variation

- *descriptive*: in which contexts is it normal/ typical for speakers to use which forms?
  - what are the rules for the variation?
- *heuristic*: what can we learn about this language from the variation?
  - what is the best analysis of this structure/form?



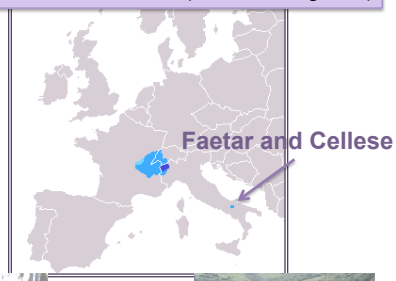
EXAMPLE FROM FAETAR **(PRO-DROP)**

The variable (pro-drop)

**/ **

[i] Ø

Language Franco-Provençal **[FRP]**
Population 70,000 in Italy (1971 census); ~600 in Faetar dialect (Nagy 2000).
Language use Most domains. Also use Italian or Piemontese [pms].
(*www.Ethnologue.ca*)



Examples of alternation

F11B: Allorrə **i** ʌ ɛst a kazə
So, he is at home. (F11B.1.tr:1)

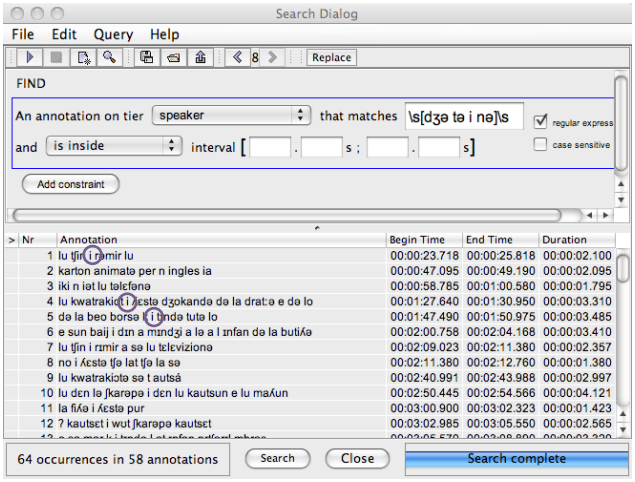
F11B: Allor ike **Ø** sə truwund ɪngjɛn la vi
So, here he is in the street. (F11B.3.tr:2)

Why study variation in Faetar pronouns?

- Remember Grenoble's encouragement...
- Do the patterns of pro-drop in Faetar suggest the effect of language contact (with Italian)?
  - Compare the distribution of *strong, weak* and *null pronouns.*
  - Compare the distribution among different age groups.

Faetar Search Results

Regular expression search for weak-form subject pronouns:



Weak Forms

	Sing.	Plural
1st	dʒə	nə
2nd	tə	və
3rd	i	i

Strong Forms

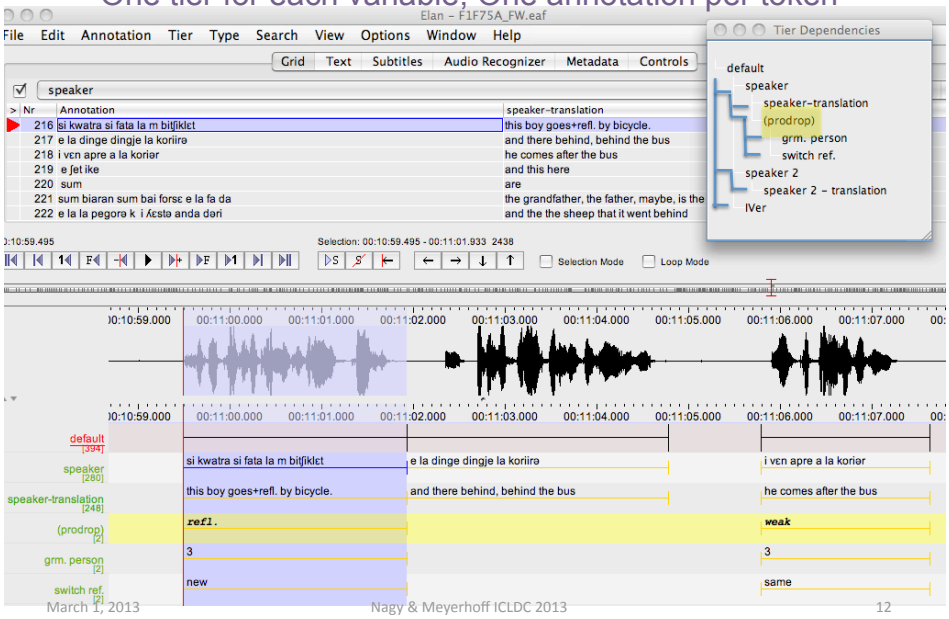
	Sing.	Plural
1st	dʒi	nu(s)
2nd	ti	vu(s)
3rd	i(ʌ)	is

Null Form

	Sing.	Plural
1st	Ø	Ø
2nd	Ø	Ø
3rd	Ø	Ø

Coding & Extracting:

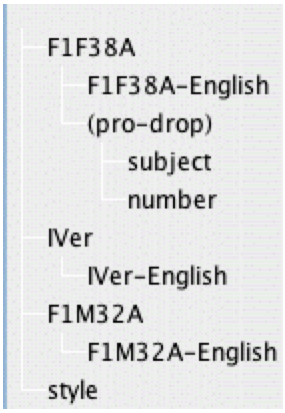
One tier for each variable; One annotation per token



Coding & Extracting

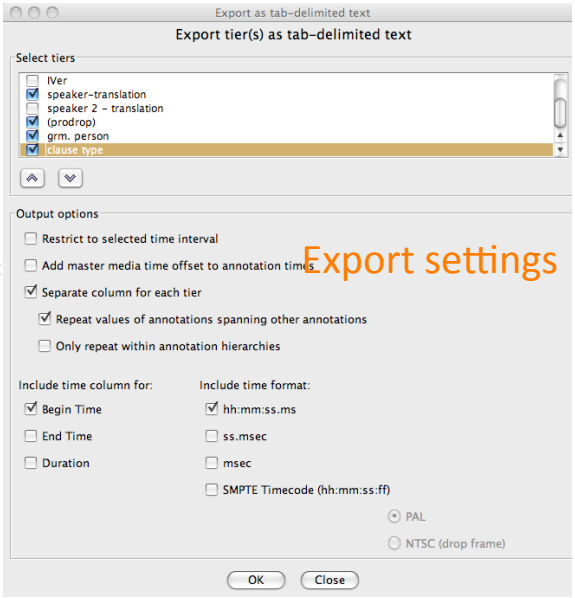
- Linguistic and stylistic factors are coded directly in ELAN, each on their own tier.

- **Advantages:**
  - **See all the context you need, and hear it, check it in Praat, as you code each factor.**
  - **From ELAN, create a .txt file for multivariate analysis (using Rbrul or Goldvarb or …)**
  - **Can (repeatedly) revise codes in ELAN and quickly recreate the data file.**



Export to analysis program

- File > Export as… > Tab delimited Text. Make sure the filename specifies the speaker and ends in "`.txt`"
- Select all the tiers that have relevant labels or transcriptions in them.
- Select: √ Separate column for each tier
- Save as a `.txt` file.
- Open the `.txt` file in Excel (use Import, skip directly to "Finish.")



Export settings

(Sorted) Exported Coding File

Begin Time	Extract	Translation	(prodrop)	grm. person	clause type	Speaker age
13:18.4	anjat la at꞉	there is the cat	0	expl	main	75
13:30.5	o sɛt i ʌɛstə kə sə fɛtʃə dəʃkund pə dəso la la lu tawula	expl. this it is that refl. makes hide under the the table	both	3	main	75
11:38.8	kə s andə fɛrmá kə nə t꞉ravərsa꞉ la vi	that has stopped +refl. so-that they can cross the street	refl	4	rel. clause	75
10:59.5	si kwatra si fata la m bitʃiklɛt	this boy goes+refl. by bicycle.	reflex.	3	main	75
11:36.6	sɛt e lu stop꞉ə	This is the stop-sign	s… ag		…n	
13:37.4	sɛt ike sə vatə sə rir dəso lu dʒari꞉ɛ	this here refl. (?) under the (?)	st… g + r		…n	
11:14.2	e la la pegorə k i ʌɛstə anda dəri	and the the sheep that it went behind	we…		cl…	7…
12:35.7	i tɪndə lo dʒəla꞉tə pə tu꞉t i tɪndə	he holds the icecream for everyone	wea…	3	na…	75
12:37.8	i tɪndə	he holds	weak	3	ai…	75

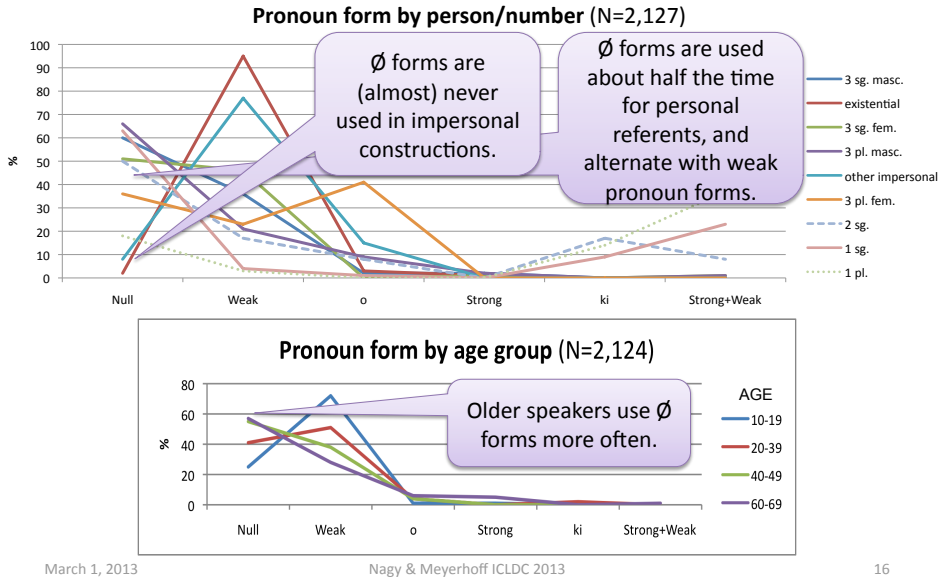
dependent variable

independent variable #1 (linguistic)

independent variable #2 (linguistic)

independent variable #3 (social)

Faetar variation patterns



EXAMPLE FROM N'KEP: [tə-, təm-] PREFIX

	Realis sbj-vb	Irrealis sbj-vb
1 singular	nam-; m-	nac-
2 singular	nem-; nəm-	nec-
3 singular	m-	cə-
1 pl exclusive	cam-; t(ə)-	ca-; t(ə)-
1 pl inclusive	t(ə)-	t(ə)-
2 plural	cam-; t(ə)-	cə-
3 plural	cam-; cəm-	ca-
Indefinite	tem-; təm-	te-; tə-

tə- seems to be more than 'indefinite' – or is it spreading?

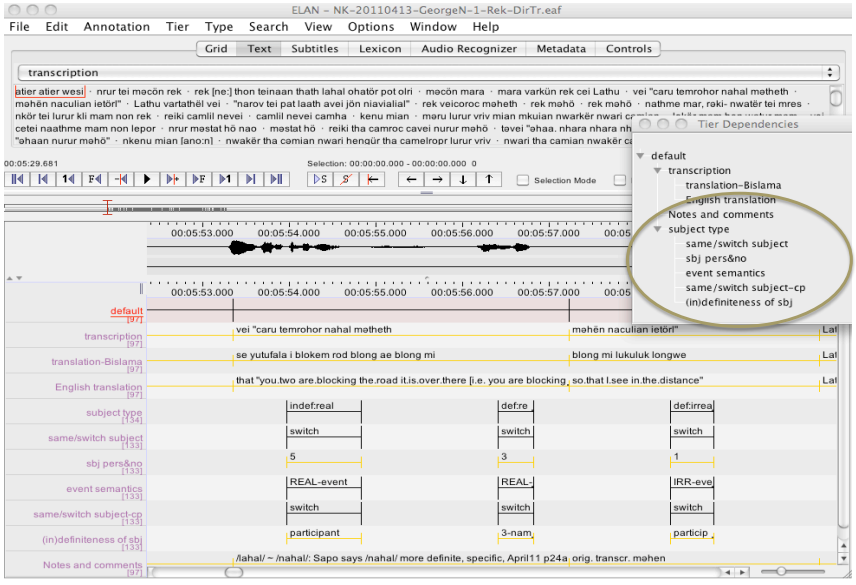
Why study variation in N'kep subjects?

- Unclear what the [tə-] and [təm-] prefixes on verbs mark
  - person and number?
  - subject properties (e.g. generic, indefinite subject)?
  - event properties (e.g. backgrounded, subordinate event)?
  - clause aspect?

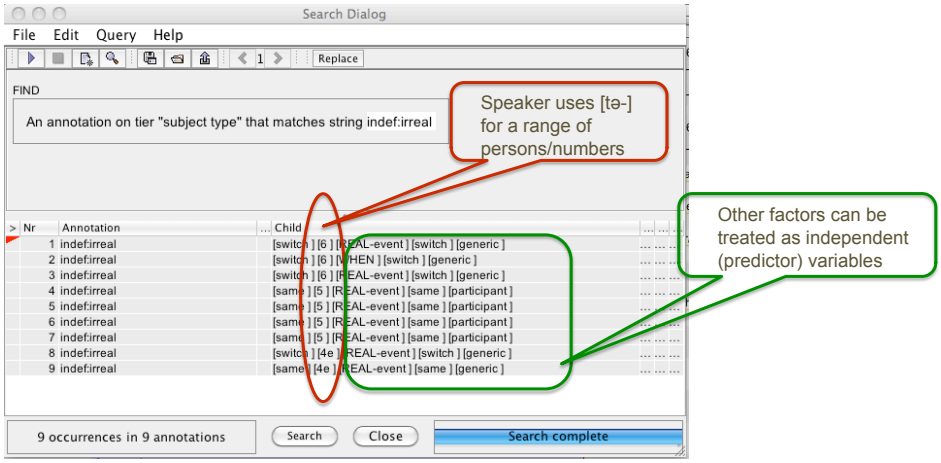
Independent variables coded

- Person and number of the subject referent
  - 1s, 2s, 3s, 1p.incl, 1p.excl, 2p, 3p
  - (in)definiteness of subject
- Same-subject versus switch-subject
  - same, switch, new
  - two models for subset chains
- Event type
  - future, other irrealis (e.g. desired), negative, imperfective (?: *L–verb*), inflected 'when', *go-come* as V2, elsewhere (realis event/state)
- Generation
  - older, middle, younger

N'kep coding and tier organisation



Extracting data for analysis



Results for tə-, təm- distribution

Referent type	Weighting	%	N
1st and 2nd person	0.91	58	162
Generic, 3rd person indefinite or non-specific, situation or weather	0.27	14	164
3rd person definite or specific	0.22	10	483
Event			
FUTURE-event	< 0.001	0	27
IRREALIS-event	0.85	15	41
NEG-event	0.95	8	41
L-verb	0.99	18	84
REALIS-event	0.99	21	509
go-come	0.99	28	76
WHEN	> 0.99	40	30
Same vs switch reference			
Same referent	0.56	23	432
New	0.54	16	84
Switch referent, incl. proper subset of previous sbj	0.40	17	293

Doesn't look like it marks prototypically 'indefinite' subjects

Maybe it has something to do with discourse topicality?

Generation of speaker (older, middle, younger) is not a significant effect.

Revisiting Grenoble

- Language variation occurs in vital, as well as endangered languages
  - variation *per se* is not a 'problem'
  - but the community may perceive it to be.

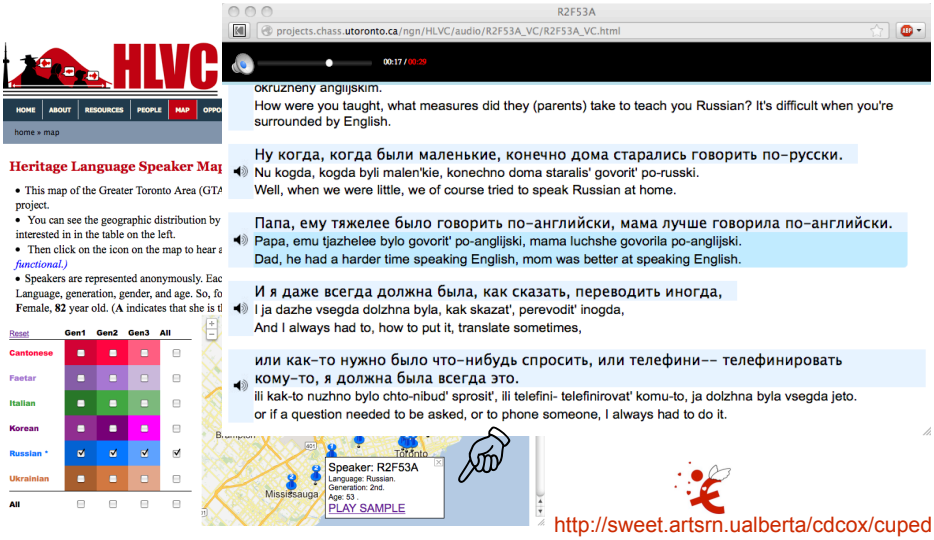
Create spiffy WWW examples

Customizable Presentation of ELAN Documents

Users' Manual
Draft · February 2010

For CuPED version 0.3.14
http://sweet.artsrn.ualberta.ca/cdcox/cuped/

CuPED turns an ELAN .eaf into animated .html



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CuPED http://sweet.artsrn.ualberta.ca/cdcox/cuped

Ethnologue www.ethnologue.org

Praat http://www.fon.hum.uva.nl/praat/

Goldvarb http://individual.utoronto.ca/tagliamonte/goldvarb.htm

Rbrul http://www.danielezrajohnson.com/rbrul.html

R http://www.r-project.org