

# Diagnostics to the Max The Nxaʔamčín Project

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# Outline: Exemplifying the Use of Diagnostics

- Gratitude
- Background to the Nxaʔamxčín Lexical Resources (Database and Dictionaries) Project
  - Community
  - Project
- Diagnostics
  - Uses
  - Types

# The *Endings* Project: How do you know you're done?

- For an edition/release to be done, the entire dataset needs to be
  - **Consistent, Coherent, Complete**
- How do you know your work is consistent, coherent, complete?
  - Use programmed “diagnostics” (Holmes & Takeda 2017)
  - Check links, cross-references, duplicates, coding, consistent use of names and tags etc.
  - Keep track of completed entries, etc.
  - Important particularly for large projects with multiple inputters taking place over a long period of time: that is: **where it is hard to prevent and catch errors**

# The Diagnostics Page

<https://jenkins.hcmc.uvic.ca/job/moses/lastSuccessfulBuild/artifact/trunk/utilities/diagnostics.html>

# The Nxaʔamxčín Lexical Resources (Database and Dictionaries) Project

# Nxaʔamxcín language & community

- Southern Interior Salish; one of 7 Interior languages; one of 23 languages in the Salish family
- Spoken historically in north central Washington State
  - Since 1870, confined to the Colville Reservation by Presidential Executive Order together with 8 other nomadic tribes
  - 4 Varieties (Wenatchi, Moses-Columbia, Entiat, Chelan); ~3500 tribal members descended from Nxaʔamxcín-speaking families
- Scarcity of resources
  - 1981 Word List (Kinkade and CCT) based on 1960s/70s fieldwork; NLP/Mattina Dictionary (2000-2006)
- Nxaʔamxcín Language Program: since late 1990s, increasingly focused on revitalization
  - Fluent and active speakers in 1991: ~60; Today: 1 + 1

# Acknowledgments

- †M. Dale Kinkade
- The speakers who worked with Dale in the 1960s & 70s
- †Mary Marchand
- †Elizabeth Davis,
- †Agatha Bart,
- †Tillie George

... who urged us to work on a dictionary in 1990

**Nxaʔamxčín Language Program Nespelem, WA—2014-today**  
qʷiymatkʷ Pauline Stensgar, k'saw's Ernie Brooks, Sarah Kell,  
Sharon Covington, Micki Bearcub-Hudson , Helen Thomas

# Project History

1. Fieldwork (1960s, 1970s), Filecards; Moses-Columbia Dictionary (1981), Nxaʔamxčín Nwwawlxtnt (2006)
2. Intended production of print dictionary using Lexware - a DOS-based dictionary-making program developed by R. Hsu (starting 1991)  
→ obsolescence
3. Production of web-based application using TEI - Text-Encoding Initiative (starting 2004)
4. Production of a print dictionary for multiple audiences, including learners, from the TEI database (starting 2010)

# Nxaʔamxčín Lexical Resources: Digital & Nondigital

## **1. Database representing the Filecards and Fieldnotes**

## **2. Online Lexical Resource—Web Application**

- Potential for interactivity
  - Questions for speakers with response possibilities
- Interfaces for different audiences
- Ease of revealing morphological relationships
- Search functions
- Extra-lexicographic information
  - Pronunciation Guide with Audio
  - Potential for more: place names, maps, flora, fauna, linking to filecards & fieldnotes

## **3. PLUS: Print Dictionary generated as a PDF**

# Raw Language “Data”: Filecards and Fieldnotes



- Cm
- h̄áweyəm work (cont'd.) (4)
  - ?ačháwey snxʷaxʷáya?qəns kaspúləxəxʷ make camp (using tipis) JM3.61.1
  - h̄áweyən kesn̄iqʷótn fixing my bed JM3.71.11
  - čemeštón ḥu kasháwyen I know how to do it. JM3.80.2
  - q̄əspaȳ h̄aweyəmínən it lasted a long time (s.t. you are using) JM3.80.4
  - h̄aweyəmínənaȳ kl̄ q̄əsp it lasted a long time (s.t. you used) JM3.80.5
  - čh̄áweyštúnən it lasted a long time (s.t. you are doing or making) JM3.80.6
  - mepənós kasháweys wa?... he learned how to make X JM3.81.1
  - kən̄ h̄awyati?axʷen I made a net JM3.85.5
  - ščh̄áweya·síčəməxʷ she made a blanket JM3.106.7
  - ščh̄áweyastáqe?əxʷ she made a blanket JM3.106.8

# Structure of a Nxaʔamxčín word

Basic Structure of Salish Word

**Pref-RED+VRoot+RED-PA=LexicalSuff-GrammaticalSuff**

The Nxaʔamxčín Word

[**GRM** – [ **LOC** – **RED** + [**vROOT**] + **RED** – **PA** = **LS**] – **TR** – **OBJ** – **SUBJ**]  
– **INTR** – **ASP**

GRM=aspect/nominalizer/possessive

PA=primary affixes

INTR=intransitive markers

LS=lexical suffixes

LOC=locative markers

OBJ=object markers

RED=reduplication

SUBJ=subject markers

TR=transitive/transitivizer markers

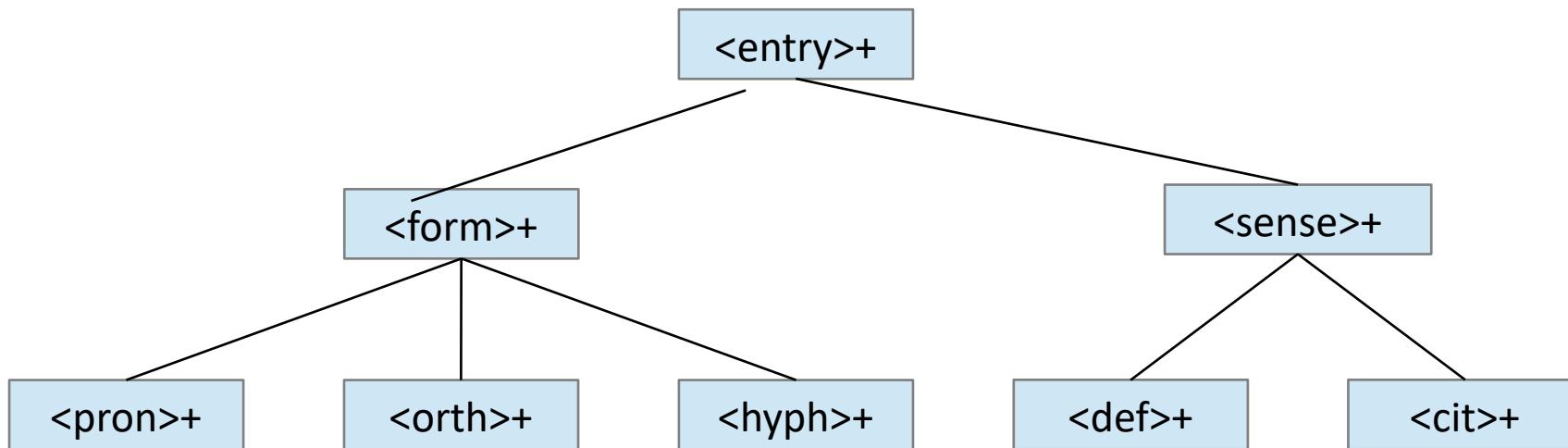
(Czaykowska-Higgins 1998 etc)

## Syncretism: **háw'iyn** ✓**háw'i-n-t-Ø-n** “I worked on it”

- Cm
- Ráweyəm      work      G6.93;G7.65;Y6.395;Y26.7,267; MS1.115; EP  
• Ráwem            S2.111,112;S2a.62-64
  - Ráweyəm      fix      Y25.110
  - yéR<sup>w</sup>yéR<sup>w</sup>t scRáwey      hard work      Y12.63
  - sx<sup>w</sup>sRáweyálx<sup>w</sup>əm      carpenter      Y10.139,140
  - Ráweyálx<sup>w</sup>əm      he built a house      Y12.158
  - Ráweyən      build something      Y12.157 / I worked on it      Y23.68      EP  
• Ráweyəm t sqey<sup>w</sup>x<sup>w</sup>      weave a barrier for a fish-trap      Y12.166
  - sRáweméx t sqey<sup>w</sup>x<sup>w</sup>      weave a barrier for a fish-trap      Y12.167
  - cRáwyékənox<sup>w</sup>      he made a bow      Y12.168
  - ?esx<sup>w</sup>sRáweyəm      my hired man      Y14.111
  - Ráweméntn      tools      Y14.114-118; EP
  - ne?áp scRáweméx      keep on working      Y16.181;Y26.8 (permanent work)
  - nRáweyús<sup>w</sup>n      I earned it
  - Ráweyn céx      make red, redder      Y17.131,133
  - Ráweyən k<sup>w</sup>él      make red, redder      Y17.132
  - Ráweyən q<sup>w</sup>éy      make blue      Y17.135
  - m<sup>w</sup>moc Ráwes      soften      Y18.152
  - Ráweyəménən      use something; machinery      Y22.139,142;Y26.227,246

# Structure of a TEI entry

For each morpheme and each polymorphemic word



Plus:    Xf= cross reference  
FS=Feature structure for each morpheme

# A typical entry: Useable Data: Coding/Tagging/Markup (using TEI)

```
<entry xml:id="?alhaw?yn">  
  <form>  
    <pron>  
      <seg type="p" subtype="i">?alháw?jyn</seg>  
      <bibl corresp="psn:ECH">ECH</bibl>  
      <seg type="n">?alháw?eyən</seg>  
      <bibl corresp="psn:JM psn:AM psn:EP">Y15.181; EP</bibl>  
    </pron>  
  
    <hyph>  
      <m corresp="m:?al">?al</m>-√<m corresp="m:haw?y">háw?jy</m>-<m corresp="m:n-CTL m:t-TR  
m:Ø-OBJ m:n-SUBJ">n</m></hyph>  
  </form>  
  
  <sense>  
    <def>  
      <seg>  
        <gloss>repair</gloss> something</seg>  
        <bibl corresp="psn:JM psn:AM psn:EP">Y15.181; EP</bibl>  
        <note type="referToElders" resp="psn:ECH">What does ?alháw?jyn mean? </note>  
      </def>  
    </sense>  
  
    <xr>See <ref target="m:haw?ym">háw?jym</ref>. </xr>  
  </entry>
```

# Useable Data: Coding/Tagging/Markup (using TEI)

ḥáw<sup>?</sup>iyən [ḥáw<sup>?</sup>iy-n-t-Ø-n] 'he visited you'

<hyph>

√<m corresp="m: haw<sup>?</sup>y">ḥáw<sup>?</sup>iy</m>

-<m corresp=" m:n-CTL m:t-TR m:Ø-OBJ m:n-SUBJ">n</m>

</hyph>

@corresp links to entries for each morpheme

delimiters (√ = -) show the type of morpheme

# Interactivity



? chúymntls

visit

## Question for Elders

## Morpheme Breakdown

/chúymntls/ EP4.46.6

[Get related words](#)

c -v/húy -mn -t -l -s

Note: Question for Elders: Should the translation in the example below be "... visit us"? [Email](#)

### COMPONENT MORPHEMES:

c      húy      mn      t      l      s

visit EP4.46.6

/qácks wa na? cúnthus kʷana? c-v/húy-mn-t-l-s/ EP4.46.6 my  
brother will get him to visit me EP4.46.6

## Finding related words



be "... visit us"? [Email](#)

### COMPONENT MORPHEMES:

c      húy      mn      t      l      s

visit EP4.46.6

/qácks wa na? cúnthus kʷana? c-v/húy-mn-t-l-s/ EP4.46.6 my  
brother will get him to visit me EP4.46.6

# Full View

■ húymnc

he visited you

/húymnc/ EP4.47.2

[Get related words](#)

√húy -mn -c

COMPONENT MORPHEMES:

húy mn t-TR si s-SUBJ

/húy/ (ROOT) ECH [hóy] Y35.103

visit; go next door Y35.103

[Other entries containing this morpheme](#)

1. /vhúy kn n?áwt/ ECH

[vhóy kən nə?áwt] JM3.104.5 I am going with you JM3.104.5

2. /vhúy kan?áwtnc/ ECH

[vhóy kənə?áwtnč] JM3.104.6 can he go with you? JM3.104.6

3. /vhúy téxʷəxʷ/ ECH

[vhóy tóxʷəxʷ] G4.92 he is going to die G4.92

he visited you EP4.47.2

/cmistúnn ci √húy-mn-c wa ?inwí/ EP4.47.2 I know he visited you (yesterday) EP4.47.2

■ húymnc

he visited you

/húymnc/ EP4.47.2

[Get related words](#)

√húy -mn -c

COMPONENT MORPHEMES:

húy mn t-TR si s-SUBJ

/s/ (AFFIX, SUFFIX, INFLECTIONAL, PRONOMINALMARKER, SUBJECT, TRANSITIVEPARADIGM, THIRD) MDK

he, she, it, they; 3rd person transitive subject marker ECH, MDK, MLW

[Other entries containing this morpheme](#)

he visited you EP4.47.2

/cmistúnn ci √húy-mn-c wa ?inwí/ EP4.47.2 I know he visited you (yesterday) EP4.47.2

# Search Functionality



**Search for entries**

Type English or Nxaʔamxcín

**Search**

Entries found: 1789

**/húymnc/ EP4.47.2**

[Get related words](#)

v|húy -mn -c

COMPONENT MORPHEMES:

[húy](#) [mn](#) [t-TR](#) [si](#) [s-SUBJ](#)

**he visited you EP4.47.2**

/cmistúnn ci v|húy-mn-c wa ?inwí/ EP4.47.2 *I know he visited you (yesterday)* EP4.47.2

**/chúymnc/ EP4.44.4**

[Get related words](#)

c -v|húy -mn -c

COMPONENT MORPHEMES:

[c](#) [húy](#) [mn](#) [t-TR](#) [sa](#) [s-SUBJ](#)

**he is visiting me (now) EP4.44.4**

1. /na? c-v|húy-mn-c ?ay?kʷáṣt/ EP4.44.6 *he will visit me tomorrow* EP4.44.6

2. /na? c-v|húy-mn-c ?ay?kʷáṣt t'u? kʷ nuxʷt k'ɬ Spokane/ ECH

# Print Output:

## Nxaʔamxčín Nwwawlxtnt

čámiá?

Nxaʔamxcín-English

čámiá? /cámia?/ (W) 1. *make believe* (W) 2. *doubtful* (JM) VAR: [čámia?] (JM)

čaq/ /caq/ «Meaning not determined.» «Root entry added based on attested complex forms.»

čáqwawa / cágawya / *turkey vulture* (JM, AM)  
VAR: [cágawya] (JM, AM) [cágʷow̕ya] (JM, AM)  
[cágʷow̕ya] (JM, AM) [cágʷoya] (JM, AM)

čaqʷ/ /caqʷ/ «Meaning not determined.» «Root entry added based on attested complex forms.»

čaqʷáłq/ /caqʷáłq/ (JM, AM) [[-caqʷ=áłq -  
-caqʷ=LA]] *summer* «Definition inferred based on phrase containing this word.» See ɬéʔqʷ (p.475).  
čaqʷáłq ?ápls [caqʷáłq ?ápls] *summer apples* (JM, AM)

čáqʷn/ /cágʷn/ [[-cágʷ-n -  
-cágʷ-CTR.TR.3OBJ.ISGTRSBJ]] *patch, add strips to; piece (add to) material to make it larger* (JM, AM)  
See c'ép'q'n (p.40). VAR: [čágʷən] (JM, AM)

čašnáw'lxʷəxʷ/ /casnáw'lxʷəxʷ/  
[[cas-náw'lxʷəxʷ - IPFV-RUN-NPFV]] *he/she is running* «Definition inferred based on phrase containing this word.» L'x čašnáw'lxʷəxʷ [l'əx casnáw'əlpxʷoxʷ] *he is running fast* (JM, AM)  
VAR: [casnáw'əlpxʷoxʷ] (JM, AM)

čatn/ /catn/ «Meaning not determined.» «Root entry added based on attested complex forms.»

čaxʷ/ /caxʷ/ «Meaning not determined.» «Root entry added based on attested complex forms.»

čaya?áw̕š/ /caya?áw̕š/ -  
-*younger=LA*] *a couple of sisters* (JM) VAR:  
[caya?áw̕š] (JM)

čáyñmn/ /cáyñmn/ *Chinese (person)* (I) «CA.  
cimman» VAR: [čáyñman] (I)

čáy'a? /cáy'a?/ *younger sister of a female* (S, EP,  
JM, AM) wíl čáy'a? [wíl čáy'a?] *younger sisters*  
(EP) «CA. cuciýa?» VAR: [čáy'a?] (S, EP, JM, AM)

čáy'a? /cáy'a?/ *younger sister of a female* (S, EP,  
JM, AM) wíl čáy'a? [wíl čáy'a?] *younger sisters*

čáʔxʷ /cáʔxʷ/ [[-cáʔ-xʷ - <cá-in-xʷ>]] 1. *feel punk* (JM, AM) 2. *sore and tired, feel punk* (EP) See xár (p.532). VAR: [čáʔxʷ] (EP, JM, AM)

čáaʔakʷ (See ɬéaaʔqʷ p.475)

čéłk/ /céłk/ [[-céłk+C - <céłk+oc>]] *he got hit (on)* (JM, AM) VAR: [čéłkəłk] (JM, AM)

čéłknúłn/ /céłknúłn/ [[-céłk+C -núł-n -  
<céłk+OC-CTR-APPL-TR.3OBJ.ISGTRSBJ]] *I accidentally hit it (a bat, a bird, a rock)* (EP) VAR:  
[čéłkəłknúłn] (EP)

čéłkin/ /céłkin/ [[-céłk-4-n -  
<céłk-APPL-TR.3OBJ.ISGTRSBJ]] *I threw it and hit it* (EP) VAR: [céłkəłkin] (EP)

čéłkn/ /céłkn/ [[-céłk-n - <céłk-CTR.TR.3OBJ.ISGTRSBJ]]  
1. *hit (by throwing); throw and hit; I meant to throw it (S, I, MS, EP, JM, AM)* 2. *I threw it at him (JM) See ckckmáñw's (p.14), yánqa? (p.565), niʔckmáñ (p.270), and nekmáñkʷn (p.263).* čéłkn kʷa?xíkʷnn [čéłkn kʷa?xíkʷnn] *I threw it at him and missed him (JM)* | čéłkn t xł'úłt [céłkan t xł'úłt] *I hit him with a rock (W)* | čéłkn xł'úłt [céłkan xł'úłt] *I hit a rock (as with a car) (W)* VAR: [čéłkan] (S, I, MS, EP, JM, AM) [čéłkan] (JM)

čéłknta? /céłknta?/ [[-céłk-n-ta? - <céłk-CTR-TR.BMP>]  
*shoot it! (marbles)* (EP) VAR: [céłknta?] (EP)

čéłk/ /céłks/ [[-céłk-s - <céłk-3OBJ.ISGTRSBJ]] 1. *he hit him (MS)* 2. *hit by throwing (MS)* «CA. cæd» VAR: [célks] (MS) [célks] (MS)

čéłkʷin/ /céłkʷin/ [[-céłkʷ-4-n -  
<céłkʷ-APPL-TR.3OBJ.ISGTRSBJ]] *I pulled it for him (as a car) (W)* VAR: [céłkʷin] (W)

čéłkʷmnčút /céłkʷmnčút/ [[-céłkʷ-mn-cút -  
<céłkʷ-REL-REFL>] *he is pulling (S)* VAR:  
[céłkʷumənčút] (S)

čéłkʷn/ /céłkʷn/ [[-céłkʷ-n -  
<céłkʷ-CTR.TR.3OBJ.ISGTRSBJ]] 1. *pull* (EP, JM, AM) 2. *I jerked or yanked it (JM)* 3. *I pulled it (JM) See ɬéckʷipmas (p.616), ckʷil'əxʷn (p.20), ckʷiłkn (p.19), niʔcéłkʷqsm (p.269), niʔckʷiłk'n (p.270),*

Root-based Index

č\*xʷam «Meaning not determined.» (p.561)

LOCATIVE AND DIRECTIONAL PREFIXES

čtxʷamstúł [[t-vxʷam-stúł - LOC-vxʷam-CAUS-3OBJ.3TRSBJ]] *scatter* (p.505)

č\*xʷaqʷ «Meaning not determined.» (p.562)

LEXICAL SUFFIXES

nał̕ʷaqʷén [[na-vxʷaqʷén=s=n - LOC-vxʷaqʷén=LA=LA]] *razor* (p.259)

č\*xʷaqʷén [[vxʷaqʷén=s=n - vxʷaqʷén=LA-CTR.TR.3OBJ.1SGTRSBJ]] *shave (face)* (p.562)

č\*xʷaxʷ «Meaning not determined.» (p.562)

LEXICAL SUFFIXES

nxʷaxʷay'a?qn [[n-vxʷaxʷay'a?qn =qn - LOC-vxʷaxʷay'a?qn=LA=LA]] *canyon where old road went up to Waterville from Beebe(south of)* (p.315)

nxʷaxʷay'a?qn [[n-vxʷaxʷay'a?qn =qn - LOC-vxʷaxʷay'a?qn=LA=LA]] *tipi* (p.315)

ñnxʷaxʷay'a?qnå [[n-n-vxʷaxʷay'a?qnå =qn-s - NMLZ-LOC-vxʷaxʷay'a?qn=LA=LA-3POSS]] *his/her camp (using tipis)* (p.431)

č\*xʷay «Meaning not determined.» (p.562)

LEXICAL SUFFIXES

č\*xʷayqn [[vxʷay=qn - vxʷay=LA]] *pile fruit/vegetables* (p.562)

katxʷayqn [[kat-vxʷay=qn - LOC-vxʷay=LA]] *a heap* (p.87)

č\*xʷayt *an herb from the mountains, used for medicine* (p.562)

č\*xʷáłf *snorting* (p.562)

REDUPLICATIONS

č\*xʷaa?xʷaa?il'x [[vxʷaa?+CVC-II'x - <snort+CHAR-AUTMid>]] *cayuses in Kartar Valley: Kartar ʃíł'p's (so called because of their snorting.)* (p.562)

PRIMARY AFFIXES

č\*xʷáłł [[vxʷáłł+C - <snort+oc>]] «Meaning not determined.» (p.562)

č\*xʷaf *hole* (p.562)

UNCATEGORIZED RELATED FORMS (INFLECTED FORMS)

čačxʷáłf [[?ac-vxʷáłf - IPFV-*hole*]] *it's got a hole in it* (p.590)

REDUPLICATIONS

nxʷañxʷañxʷáñána? [[n-vxʷañxʷañ+CVC-áñána? - LOC-vhole+CHAR=LA]] *holes in ears or head* (p.316)

nxʷañxʷañxʷáñikn'xi [[n-CeC+vxʷañxʷañ=ikn'=xi - LOC-AUG+vhole=LA=LA]] *holes in both soles* (p.316)

áñxʷañxʷañxʷáñána? [[z-CeC+vxʷañxʷañ=áñna? - NMLZ-AUG+vhole=LA=LA]] *pierced ears* (p.468)

txʷíñxʷíñxʷáłq [[t-vxʷíñxʷíñ+CVC?=áłq - LOC-vhole+CHAR=LA]] *flute* (p.507)

ñxʷañxʷañxʷáñána?n [[CeC+vxʷañxʷañ=áñna? - AUG+vhole=LA-CTR.TR.3OBJ.ISGTRSBJ]] *I pierced both her ears* (p.562)

ñxʷañxʷañxʷáñána'n [[CeC+vxʷañxʷañ=áñna? - AUG+vhole-CTR.TR.3OBJ.ISGTRSBJ]] *punch holes on edge to lace hide to frame for tanning* (p.562)

čačxʷáñxʷáñaf [[?ac-vxʷáñxʷáñ+CVC - IPFV-*hole+CHAR*]] *full of holes* (p.590)

PRIMARY AFFIXES

katxʷáłł [[kat-vxʷáłł+C - LOC-vhole+OC]] «Meaning not determined.» (p.87)

nxʷañxʷáñipä [[n-vxʷañxʷañ+C =ipä - LOC-vhole+OC=LA]] *hole in the bottom* (p.316)

č\*xʷañxʷáññ [[CeC+vxʷañxʷañ+C - AUG+vhole+OC=LA]] «Meaning not determined.» (p.562)

# Challenges for consistency, coherency, completeness

- Consistency
  - The number of coders: 2 “editors”, 7 research assistants; 2 programmers working on font conversion
  - Kinkade’s fieldnotes and filecards (different periods, different speakers)
- Consistency and coherence
  - Orthography and Spelling—e.g., schwa, glides....in reduplications
  - Analysis—e.g., particles, root extenders, morphemic encoding (meanings of s-)
  - Cross-references (and root-merging)
- Completeness
  - E.g., Definitions—e.g., inferred; glosses
  - E.g., Duplicates

# The Diagnostics

# Examples: Tidying Up

# Consistency and Completeness

Check out all the diagnostics at the top: green, yellow, red, exceptions recorded

- Hyphs/words with non-phonemic characters
- Notes missing capitalization
- Duplicate ids
- Morphemes pointing at non-existent entries
- Non-phonemic characters
- Hyphs with morphemes encoded incorrectly
- At the bottom: cross reference checks, placename checks, loanwords

# Examples: Analysis

# Consistency and Coherence

- All the s-prefix cases
- Check out: s- prefix tagged as “sac”; as “s” (nominalizer) with “mix”, without “mix”; as s-IMPF in entries with “mix”, without “mix”

# Syncretism, homophony, stress-induced allomorphy

Morpheme surface form: s links to

## Homophony

m:s

**Prefix: nominalizer**

m:s-IMPF

**Prefix: rare aspect marker**

m:s-SUBJ

Inflection

m:s-POSS

Suffix: 3<sup>rd</sup> possessive

## Allomorphy

m:sac

**Prefix: aspect marker**

m:us

Lexical suffix

m:stu

Transitivizer: causative

m:si

Inflection

## Syncretism

m:n-CTL m:t-TR m: $\emptyset$ -OBJ m:s-SUBJ

Inflection

m:t-TR m: $\emptyset$ -OBJ m:s-SUBJ

Inflection

m: $\emptyset$ -OBJ m:s-SUBJ

Inflection

# Consistency and coherence

- Orthographic representations: Orthography reports
- All the reduplication cases

# Orthography and Spelling

NAPA; partially phonemic (mdk)  
sc'əšl'úša? 'hail'

smáxʷəxʷ 'falling snow'

wəsxnálqʷ 'tall'

ckcín 'riverbank'

Nxaʔamxčín Language Program  
sc'əəsll'úusa?

šmáxʷəxʷ or šmáxʷxʷ

wəšxənálqʷ

čəkčín

a aa ə əə č c c' h ḥ hʷ i ii k k' kʷ kʷʷ l l' ll' +ł' m m' n n' p p' q q' qʷ qʷʷ r r' š s t t' u uu w w' x xʷ x̣ xʷ y y' ń ń' ńʷ ńʷ ?

# Examples of spelling categories

Phonemic (mdk/ech)	Spelling	Gloss	Other possibilities
<b>Reduplication representations</b>			
wl'wl'im	wəl'wəl'ím	iron, metal	wl'wəl'ím wəl'wl'ím
ł'-ł'ékʷ-ł'èkʷ	ł'-ł'ékʷ-ł'èkʷ	fawn with spots (newborn fawn)	ł'ə-ł'ékʷ-ł'kʷ ł'ł'kʷł'kʷ ł'ł'kʷł'èkʷ etc
múš-š	múš-əš	four	
háw?-w?-i	háw?-w?-iy	be born	háw?-əw?-i

# Coherence and Completeness

- All the particle cases
- E.g., ta? ‘imperative’
  - Leading to an article on particle positions

# For example: Imperative marker

q'wəl-xít-əxʷ	ta?	ḥananík	yaʕ?tú	ta?	káł-c-xʷ
roast-APP-3O.2sS	IMP	rabbit	all	IMP	give-1sO-2sS
'You roast rabbits!' (MDK.EP2.175.6)			'Give it all to me!' (MDK.W2.40)		

## How “should” imperative markers be listed in a dictionary?

Function: imperative; Positions: second position clitic; Shape: “small”

Second position clitics like ta? ‘imperative’

- As with all morphemes, give them a lexical entry
- Treat them as affixes ..WHEN THEY OCCUR RIGHT AFTER THE VERB THEY ARE ‘IMPERATIVIZING’

q'wəl-xít-əxʷta?  
yaʕ?tú ta? in yaʕ?tú ta? káł-c-xʷ

is a lexical entry  
is NOT a lexical entry

# Value of diagnostics

- Helps to ensure consistency in coding
  - ➡ Especially useful when many different contributors
- Allows for finding patterns in data
  - ➡ Thus leading to ensuring consistency in coding
- Allows for finding patterns in data
  - ➡ Thus leading to more accurate data analysis
  - ➡ Thus leading to better understanding and therefore better data description
  - ➡ Thus leading to consistency in coding

**lámlamt**