Speech errors in nominalized clauses:
A clitic to affix shift in Thompson River Salish morphology[*]

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Abstract:

Subject agreement morphology in Thompson River Salish (TRS) is shifting from clitic status to affix status. This study presents new fieldwork data from this critically endangered language, including the first ever systematic analysis of speech errors in a Native American language. This clitic-to-affix shift is occuring in nominalized clauses, and indicates that nominalization agreement morphology is changing syntactic position. The data thus offer a synchronous view of morphological changes that have previously only been considered from a historical-comparative perspective (eg. Newman 1979, 1980, Davis 1999), and reveal insights into how agreement morphology is processed at the interface between phonology and morpho-syntax.

1. Introduction

Joe Stemberger (*IJAL* 1984: 345-346) on collecting speech errors:

> Researchers such as myself must be willing to monitor constantly the speech around us and to behave oddly by writing things down in the middle of conversations .... In fieldwork by linguists, however, ... the linguist transcribes in detail everything that the consultant says. In other words, the situation requires the linguist to behave in the same odd way that the collector of speech errors does. This speech situation is perfectly adapted for collecting speech errors ....

Outline of talk:
- language background
- subject marking in Thompson Salish: possessive agreement marked via clitics
- data on nominalized clauses: possessive agreement often marked via affixes
- speech errors: possessive agreement sometimes marked as both clitic and affix
- conclusion: the phonology-morphosyntax interface

1a. The target language: Nɬeʔkepmxcin (Thompson River Salish)

- one of 23 Salish languages; member of Interior Salish
- severely endangered; no more than a few 100 fluent elderly speakers (Kinkade 1992, Davis and Matthewson to appear)
- closest to Proto-Salish (Newman 1979, Kroeber 1999, Davis 1999, 2000)

 (map from Mithun 1999)

- predicate initial: VSO
- 2nd position clitics with evidential, modal, aspectual, situational deictic meanings (CP)
- radical head-marking language (transitivity, subject and object agreement, etc.)
- overt lexical arguments are not required, and often *pro* once established in discourse

(1)   *VERB*   *[2Cl]*   *S*   *O*
            qʷáx̣-t-sm-s   =nke=ƛə́m̓=xeʔ   ɬ=Sára   ɬ=n-spún.[1]
            borrow-TRANS-1SG.O-3TS   =EVID=PERF=DEM   DET=Sara   DET=my-spoon
            'Sara must have taken my spoon.'

Auxiliaries typically precede the verb and attract 2nd position clitics. Transitive suffixes remain attached to the verb:

(2)   *AUX [2CL]*   *VERB*   *S*   *O*
            wʔéx=ń̓=iʔ=qay̓=ƛuʔ=xeʔ   c̓éw̓-es   *pro*   ə=nk̓ʷən̓ústn
            PROG=YES/NO=yet=recollect=still=DEM   wash-TRANS.3O.3TS   *pro*   DET=window
            'I think she's still out there washing the window.'

How to identify clitics:

(3)   CLITIC MOBILITY CRITERION
(i)   If an agreement morpheme occupies a variable position relative to a given predicate, it is a clitic.
(ii)   Otherwise, it is an affix.   (adapted from Davis 2000:502)

2. Subject-marking in Thompson River Salish
There are full subject agreement paradigms for indicative, conjunctive (i.e. subjunctive)[2] and nominalized clauses.
Clitics (=) mark intransitive subjects; suffixes (-) mark transitive subjects (TS).

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[1] See the Appendix for a key to the orthography and glosses.
[2] In the Interior Salish tradition, "subjunctive" clauses and agreement morphology are labelled *conjunctive* to avoid confusion with "subject" in glosses.

	1sg	2sg	1pl	2pl	3
Indicative Clitic	=kn	=kʷ	=kt	=kp	=Ø
Possessive Clitic	n=	eʔ=	=kt	=ep	=s/=c[3]
Conjunctive Clitic	=wn, =un	=uxʷ	=ut	=up	=us
Subject Suffix	-en	-exʷ	-et	-ep	-es

Table 1. Subject marking in Nɬeʔkepmxcin
(adapted from Thompson and Thompson 1992:58-61; Kroeber 1997:378)

In transitive clauses, subject agreement is marked with a suffix encoding the person and number of the subject; as well as an expletive clitic encoding clause type (always 3rd person).

Clause Type	Intransitive	Transitive
Plain	Indicative Clitic (InCl)	Expletive 3InCl + Suffix
Nominalized	Possessive Clitic (PoCl)	Expletive 3PoCl + Suffix
Conjunctive	Conjunctive Clitic (CnCl)	Expletive 3CnCl + Suffix

Table 2. Thompson (and Proto-Salish) subjects (Davis 1999, 2000)

(4a)   Possessive clitic (*=s*) surfaces after first prosodic word (future auxiliary):
          ... ʔe   s=xʷúy̓=**s**   xʷíʔ-Ø-Ø-**ne**.
          ... and   NOM=FUT=**3PoCl**   look.for-TRANS-3OBJ-**1SG.TRANSSUBJECT (TS)**
          '... and I'm gonna' try and find it.'

(4b)   Possessive clitic (*=c*) surfaces after first prosodic word (the verb *tékɬ* 'rain'):
          téʔ   [k   s=tékɬ=c].
          NEG   COMP   NOM=rain=**3PoCl**
          'It's not raining.'

(5a)   Conjunctive clitic (*=us*) surfaces after first prosodic word (progressive auxiliary):
          ... ɬ   wʔéx=**us**   cúɬ-x-ə-Ø-**ne**   t=ɬ=n-cítxʷ.
          ... COMP   PROG=**3CnCl**   show-APPL-DRV-3O-**1SG.TS**   OBL=DET=1SG.POSS-house
          '... when I show him the house.'

(5b)   Conjunctive clitic (*=us*) surfaces after first prosodic word (the verb *wikts* 'see')
          ... ɬ   c̓éw-ə-Ø-**ne**=**us**   he=nk̓ʷənk̓ʷənústn.
          ... COMP   wash-TR-3O-**1SG.TS**=**3CnCl**   DET=windows
          '...when I washed the windows.'

(6)   Indicative clitic (*=Ø*) surfaces after first prosodic word (progressive auxiliary)
          wʔéx=**Ø**   =xeʔ   ʔes-k̓ʷén̓-s-t-sm-**s**   ɬ=n-snúk̓ʷeʔ
          PROG=**3InCl**   =DEM   STAT-look-CAUS-TRANS-1SG.O-**3TS**   DET=1SG.POSS-friend
          'My friend was watching me.'

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[3] The affricate [tʃ] (orthographic *-c*) appears after coronal fricatives [s ʃ ɬ].

Syntactically, clitics (which encode clause type) are in Cº; affixes, which encode person and number agreement, are in *v*º (eg. Davis 2000, Wiltschko 2006, 2008):

CP

OUTER
AGREEMENT

expletive subject clitic   *v*P

INNER
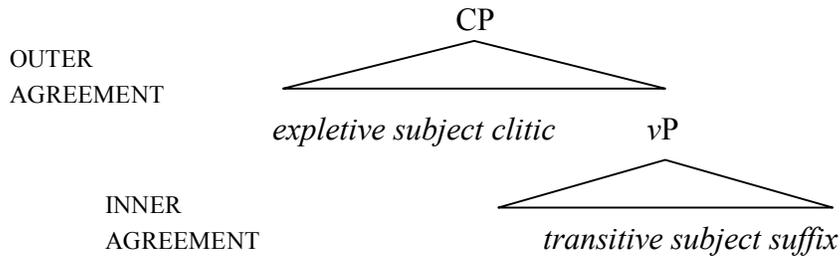AGREEMENT   *transitive subject suffix*

Figure 1. The "expletive" pattern of agreement:
Expletive clitic and subject agreement suffix in Nɬeʔkepmxcin transitive clauses

There is a consistent link between the syntactic position of agreement morphology (Cº or *v*º) and its phonological realization (clitic or affix).

3. The Problem: Nominalized clauses in Thompson Salish
We saw in (4-6) the expected pattern of agreement in nominalized clauses with an auxiliary:
NOM=Auxiliary=PoCl Verb

The expected pattern in nominalized clauses without an auxiliary is:
NOM=Verb=PoCl

In nominalized transitive clauses lacking an auxiliary, the expletive possessive clitic *=s* never surfaces:

(7) Possessive clitic does not surface after transitive verbs in absence of auxiliary:
      ... ʔe   s=wík-t-Ø-ne(***=s**).
      ... and   NOM=see-TRANS-3OBJ-1SG.TS(***=3PoCl**)
      '... and then I saw her.'

Compare to (4a) or (8), where we have an auxiliary, and the expletive *=s* is obligatory:
(8)   teté?   k   s=xʷúy̓***(=s)**   ʕʷey-t-Ø-éne.
        NEG   COMP   NOM=FUT***(=3PoCl)**   burn-TRANS-3O-**1SG.TS**
        'I'm not gonna' burn it.'

Compare (7) with the conjunctive clause in (5b), where the conjunctive clitic is obligatory, even in the absence of an auxiliary.

4. A solution: A clitic to affix shift
Q: Why does the expletive possessive clitic not surface after a transitive verb?
A: Because it is not a clitic, but has been reanalyzed as an affix. Transitive verbs already carry indicative subject agreement suffixes, so a possessive subject suffix can not co-occur. (see Brown et al. 2003, 2005, Wiltschko 2008, for a similar account of transitive gaps in Salish)

This pattern is observed in nominalized clauses in Southern Interior languages:
In Shuswap, Columbian and Okanagan Salish, possessive agreement clitics have been uniformly reanalyzed as affixes (Davis 1999, Kroeber 1999).[4]

That is, nominalization agreement morphology has shifted syntactic position from C° to *v*°.

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                    CP
             _____/_____
            /              \
           _               vP
                      _____/\_____
                     /            \
                   subject affix
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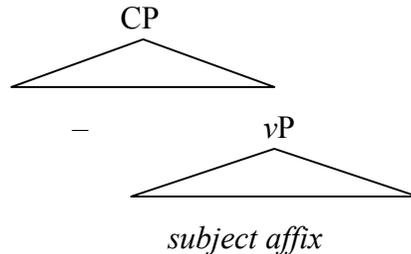
Figure 2. Southern Interior Salish: subject affix only (*v*P agreement)

But now we have a paradox:
- Possessive subject agreement morphology is processed as a clitic (CP agreement) in the presence of an auxiliary, but as an affix (*v*P agreement) otherwise.

Is there other evidence that nominalization morphology is variably treated?

5. Overt affixal behaviour: gapped clauses

In nominalized clauses containing a gap (eg. the relative clause in 9), the nominalizer *s-* itself often surfaces as a prefix to the verb (*n-* 'give' in 9) rather than as a proclitic to a preceding auxiliary (progressive *ʔex* in 3). (Kroeber 1997, 1999)

By the Clitic Mobility Criterion (3), the nominalizer *s-* must be an affix in (9):

(9)   ... ɬ=n̓k̓ətním̓tn   [CP   ɬ   ʔex   **s**-n-t-Ø-és   ɬ=Máry].
        ... DET=fishing.rod   COMP   PROG   **NOM**-give-TRANS-3O-3TS   DET=Mary
        '... the fishing rod that he gave Mary.'

The CP with the wh-gap in (10) follows the same pattern:

(10)   sté?   [CP   k   xʷúy̓   **s**-ník̓-n-Ø-xʷ].
        what   COMP   FUT   **NOM**-cut-DRV-3O-2SG.TS
        'What are you going to cut it with?'   (adapted from Kroeber 1997: 395, ex. 43)

Complement clauses that are nominalized sometimes also behave this way:

(11)   cú-ne   xe?   [CP   k   xʷú?   **s**-kən-t-Ø-ém,
        think-TR.3O.1SG.TS   DEM   COMP   FUT   **NOM**-help-TR-3O-IDF.TS,
               tékm=us   e=séytknmx,   e=Bíll] ....
               all=3CnCl   DET=people,   DET=Bill ...
        'I thought everyone was going to help Bill ....'

This pattern is not uncommon, and alternates with the clitic behaviour.

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[4] The same change has occurred in Bella Coola (Davis 2000:508, ft. 13).

By the Clitic Mobility Criterion, the morphemes *s=...=s* in (4a), (8) and (12) must be clitics.

(12)　　ʔéx=kn=xeʔ　　　　　　qeʔním　　　　[CP　　k　　　s=ʔéx=**s**
　　　　PROG=1SGInCl=DEM　hear　　　　　　　　COMP　NOM=PROG**3PoCl**
　　　　　　míl̓t-m-t-**s**　　　　　　　　　k　　　swét=us].
　　　　　　visit-REL-TR.2SGO-**3TS**　　　IRL　who=3CoCl
　　　　'I heard that somebody was visiting you.'

Thus, even in the presence of an auxiliary, nominalization morphemes are not uncommonly interpreted as affixes.

6. Speech errors
We would expect such a situation to be unstable:

	NOMINALIZER	POSSESSIVE AGREEMENT
PATTERN 1 (PROTO-SALISH, THOMPSON SALISH)	Clitic	Clitic
PATTERN 2	Clitic	Affix
PATTERN 3	Affix	Clitic
PATTERN 4 (SOUTHERN INTERIOR SALISH, SOME THOMPSON)	Affix	Affix

Table 3. Expected co-occurrence patterns of nominalizer and
possessive agreement in nominalized transitive clauses

Speech errors show that the two parts of the nominalization system (the nominalizer *s=* and the possessive agreement clitic *=s*) are indeed sometimes produced in different phono-syntactic domains (*v*P, affixed to the verb; and CP, cliticized to the initial auxiliary).

6.1 Method
- I counted nominalized clauses produced during 31 fieldwork sessions spanning 15 months (two language consultants). Sessions were recorded and then transcribed in detail.
- Each instance of a nominalized clause was classified as transitive or intransitive, with or without auxiliary, and for which error type occurred (Pattern 2 or 3, or a variant thereof).
- Because transitives do not carry possessive agreement (see section 3), intransitive clauses with auxiliaries are the primary source of these errors.

6.2 Results
Total nominalized clauses:　　1323
Intransitives:　　　　　　　　950　　No auxiliary:　739　　With auxiliary: 211
Transitive:　　　　　　　　　　373　　No auxiliary:　316　　With auxiliary: 57

Production rates were calculated as a percentage of overall productions with auxiliaries. I report only on intransitive forms here.

PATTERN 1: Typical and expected clitic pattern (4a, 8) [NOM=aux=PoCl verb] (34.1%)
(13)   ... k   **s**=xʷúy̓=**s**   nés   zéw̓-m   ɫ=Jóe   t=k=spiʔx̌áwt
         ... COMP **NOM**=FUT**3PoCl**   go   dipnet-INTRANS   DET=Joe   OBL=IRL=day
         '... that Joe was gonna' go dipnetting (fishing) tomorrow.'

PATTERN 2: Speech error: nominalizer as clitic (*s=*), possessive agreement as affix (*-s*)
[NOM=aux verb-POSS] (2.4%)
(14)   ʔé   **s**=nés   púyt-**s**.
         and   **NOM**=go   lie.down-**3POSS**
         'And she went to bed.'

PATTERN 2A: Speech error: possessive agreement surfaces twice (clitic *=c* and affix *-s*):
[NOM=aux=PoCl verb-POSS] (1.9%)
(15)   ... ʔe   **s**=nés=**c**   xʷəst-**s**
         ... and   **NOM**=go=**3PoCl**   return.home[INTRANS]**-3POSS**
         '... and then he went home.'

PATTERN 3: Speech error: possessive agreement as clitic (*=kt*), nominalizer as prefix (*s-*):
[aux=PoCl NOM-verb] (4.3%)
(16)   ... te   xʷúy̓=**kt**   **s**-kʷúkʷ
         ... that   FUT=**1PL.PoCl**   **NOM**-cook
         '... that we're going to cook.'

PATTERN 3A: Speech error: nominalizer surfaces twice (clitic *s=* and affix *s-*)
[NOM=aux=PoCl NOM-verb] (4.3%)
(17)   sté?   [CP k   **e?**=**s**=xʷúy̓   **s**-txʷ-ə́p].
         what   COMP   **2SGPoCl**=**NOM**=FUT   **NOM**-buy-INCH
         'What are you going to be buying?'

PATTERN 4: Southern Interior/Shuswap affix pattern [aux NOM-verb-POSS] (47.9%)
(18)   ... tk   smíyc   tk   xʷúy̓   **s**-q̓áy̓-m-**s**.
         ... OBL.IRL   deer   OBL.IRL   FUT   **NOM**-shoot-INTRANS-**3POSS**
         '... a deer that he was gonna' hunt.'

	NOMINALIZER	POSSESSIVE AGREEMENT	RATE (%)
PATTERN 1	Clitic	Clitic	34.1
PATTERN 2	Clitic	Affix	2.4
2A	Clitic	Clitic & Affix	1.9
PATTERN 3	Affix	Clitic	4.3
3A	Clitic & Affix	Clitic	4.3
PATTERN 4	Affix	Affix	47.9
(PATTERN 5)	Clitic & Affix	Clitic & Affix	0.0

Table 4. Attested co-occurrence patterns of nominalizer and
possessive agreement in intransitive nominalized clauses with auxiliaries

Comparable speech errors are (never) made in the indicative or conjunctive paradigms, again suggesting that a reanalysis is underway in the nominalization paradigm.

(19)   ... e   xʷúy̓=wn   nes   páx̣-m(*/-wn).
        ... COMP   FUT=1SGCnCl   go   hunt-INTRANS(*/-1sg.Conjunctive.Suffix)
        'when I go hunting.'

(20)   w?éx=kʷ=n̓=i?=x̌̓u?   cw-úm(*/-kʷ)   tk,   uh, ... kẓ=én̓i.
        PROG=2SGInCl=YES/NO=yet=still   make-INTRANS(*/-2SG) OBL.IRL, uh, ... prick=ear
        'Are you still making, uh, earrings?'

7. Stability over time
So far we saw:
In transitive nominalized clauses, nominalization morphology is sometimes treated as affixal, and sometimes as a clitic.

In particular, in the absence of an auxiliary, possessive agreement never surfaces. This suggests that it is analyzed as an affix. Transitive verbs carry indicative affixes, which block the possessive affix from surfacing.

The basic pattern is repeated here for convenience:
(21) With auxiliary, clitic behaviour
        ?e   k   s=nés=c   míʔt-m-s   ɫ=snúk̓ʷe?-s.
        and   COMP   NOM=go=3PoCl   visit-REL-3O-3TS   DET=friend-3POSS
        'And then (he wanted to) go meet his friends.'

(22) No auxiliary, affix behaviour (possessive clitic does not surface)
        teté?   k   s=n-xʷən-t-sí-s(**=c**).
        NEG   COMP   NOM=LOC-believe-TR-2SGO-3TS(**=3PoCl**)
        'She doesn't believe you.'

(23) Transitive verb allows only one subject suffix
        [CP [vP verb-TRANS-OBJECT.SUFFIX-SUBJECT.SUFFIX]=CLITIC]

a.   * [CP s= [vP ce-t-Ø-és-c]]
        NOM=put-TRANS-3OBJ-3TS-3POSS.SUBJECT
        intended: 'S/he put it'   [nominalized]

b.   [CP s= [vP ce-t-Ø-és]]
        NOM=put-TRANS-3OBJ-3TS
        'S/he put it'   [nominalized]

c.   [CP [vP ce-t-Ø-és]=us]
        put-TRANS-3OBJ-3TS=3CnCl
        'S/he put it'   [conjunctive]

Perhaps remarkably, this contrast has been robust for at least 130 years. We find it in Kroeber (1997, 1999), Thompson and Thompson (1992, 1996), and *The Morning Prayer and the Evening Prayer* 1878.

(24)   Possessive clitic does not surface after transitive verbs: 1878 examples
        ... te   s=cu-t-Ø-és(**=c**)   n ɬ   xéʔ   ʔeɬ   n-ʔéye.
        ... OBL NOM-do-TR-3O-3TS(**=3PoCl**) in DET heaven   and   LOC-here
        "... maker of Heaven and Earth."
[from *The Apostles' Creed* in *The Morning Prayer and the Evening Prayer* 1878:20]

(25)   o skʷúkʷpiʔ-kt   x̣ʷə́n-t=us   ʔe   s=kən-t-í-p(**=s**).
        o chief-1PL.POSS   fast-IM=3CnCl and   NOM=help-TR-1PL.O-2PL.TS(**=3PoCl**)
        'O God, make haste to help us.'
[from *The Lord's Prayer* in *The Morning Prayer and the Evening Prayer* 1878:16]

This suggests that the processing of the same agreement morphology in two different syntactic positions can be a stable part of the synchronous grammar.

8. Conclusion: Some speculations about the phonology-morphosyntax interface

It's all well and good to suggest that nominalization morphology is processed in two different syntactic positions, but what does that tell us about the cognitive processing here?

Why are nominalized clauses the target for change, just like in Southern Interior Salish, and not conjunctive or indicative clauses?
        (i) language contact?
        (ii) homophonous NP possession paradigm (Davis 1999, Kroeber 1999)

The clausal and phrasal (eg. NP) nominalization paradigms are identical in terms of their segmental content (though not other formal features! -- see Davis 1999 for thorough discussion):

	NOMINALIZER	1sg	2sg	1pl	2pl	3
Clausal Nmz.:	s=					
Possessive Clitic (marks subjects)		n=	eʔ=	=kt	=ep	=s/=c
Phrasal Nmz.:	s-					
Possessive Affix (marks possessors)		n-	eʔ-	-kt	-ep	-s/-c

Table 5. Clausal and phrasal possession marking in Nɬeʔkepmxcin
(adapted from Thompson and Thompson 1992)

These are the **three core transitive cases** we need to explain:

(A) standard:	NOM=aux=PoCl verb-TS	(complement clauses)
(B) affixal behaviour:	aux NOM-verb-TS(*-POSS)	(gapped clauses)
(C) no auxiliary:	NOM-verb-TS(*-POSS)	(all nominalized clauses)

Some assumptions:
- Agreement features are parasitic on other functional heads (C° and *v*°)
  (Davis 2000, Wiltschko 2008, Chomsky 1995 in general, etc.)
- C° and *v*° each head a syntactic phase, which has a phonological spellout
  (e.g. Selkirk and Kratzer 2007)

morphosyntax	interface	phonology
C° [clause type, subj agr,]	CP phase	= clitic (PoCl)
v° [subj agr.]	*v*P phase	- transitive suffix (TS), - possessive affix (POSS)

Table 6. The link between morphosyntax and phonology

Some crude speculation: I use 3rd person nominalization morphology *s=...=s* to illustrate.

(A) standard: NOM=aux=PoCl   verb   (complement clauses)
In complement clauses, nominalization is determined by the matrix clause, that is, external to the entire nominalized clause. (e.g. complements of the verbs *say, think, hear.*)

level of nominalization: *CP phase*   are clitics *s=...=s* available? *yes*

(B) affixal behaviour: aux   NOM-verb-TS(*-POSS) (gapped clauses)
In gapped clauses (e.g. relative clauses), nominalization is determined by the *v*P-internal gap (e.g. oblique arguments extracted from (di)transitives result in nominalized clauses).

level of nominalization: *v*P phase   are affixes *s-...-s* available? *yes*

(C) no auxiliary: NOM-verb-TS(*-POSS) (all nominalized clauses)
The overt phonological host for agreement morphology is a verb. First potential level to apply nominalization morphology is *v* (spellout in *v*P phase).

first linear level of nmz: *v*P phase   are affixes *s-...-s* available? *yes*
                                can affix appear? *no (position occupied by TS trans. agr.)*
                                        yes for intransitive verbs

(D) errors:
Since both clitic and affix realizations of nominalization morphology are available and used, we expect the "wrong" forms to be accessed some of the time.

- Because conjunctive and indicative paradigms do not have homophonous affixal versions, (B-D) do not occur in the conjunctive or indicative subject marking paradigms.

- The selection of affix rather than clitic is done purely on the basis of segmental identity (Table 5); other properties of the two nominalization paradigms are otherwise distinct!

	Segmental content	Position	Syntactic Feature
Clausal Nominalization (subject marking)	$/\int...\int/$	clitic	[clause type] [subject person] [subject number]
Phrasal Possession (possessor marking)	$/\int...\int/$	affix	[possessor person] [possessor number]

Table 7. Features of Clausal Nominalization and Phrasal Possession Paradigms

Joe Stemberger again (1984: 349):
> Currently, however, many [fieldworkers] are simply ignoring errors. They wish to learn the rules of the language, and incorrect items obviously do not follow the rules. However, ... errors can be used to infer the regularities of the language .... they should not ignore errors, but write them down and collect them in a special place.

Appendix
Abbreviations in the glosses are based on Thompson and Thompson 1992, 1996, Kroeber 1997:

'-' = affix	IRL = irrealis
'=' = clitic	LOC = locative
* = ungrammatical	NEG = negation
APPL = applicative [transitive suffix]	NOM = nominalizer
CAUS = causative [transitive suffix]	O = object
CnCl = conjunctive clitic	OBL = oblique
COMP = complementizer	PERF = perfective
DEM = demonstrative	PL = plural
D, DET = determiner	PoCl = possessive clitic
DRV = directive transitivizer	POSS, PS = possessive (affix)
EVID = evidential	PROG, PRG = progressive
FUT = future	REL = relational [transitive suffix]
IDF = indefinite	SG = singular
IM = immediate [intransitive suffix]	STAT = stative prefix
INCH = inchoative [intransitive suffix]	TRANS, TR = control transitivizer
InCl = indicative clitic	TS = transitive subject
INTRANS, INTR = intransitive	

Data are presented in the orthography developed in Thompson and Thompson (1992, 1996).
Acute accent ´ indicates word-level stress. Symbols not listed are the standard IPA forms:

c = [tʃ] or [č]   *ʒ̣* = [ʌ]   *ṣ* = [s]
ç = [ts]   *i* = [i, ei, ai]   *u* = [u, o, ɔ]
c̓ = [ts']   *o* = [o, ɔ]   *x̣* = [χ]
e = [e, æ, a, ɛ, ə]   *s* = [ʃ] or [š]   *y* = [y, i].

References:

Brown, Jason, Karsten Koch, and Martina Wiltschko. 2003. The person hierarchy: primitive or epiphenomenal? Evidence from Halkomelem Salish. In Keir Moulton and Matthew Wolf, eds. *Proceedings of the 34th meeting of the North Eastern Linguistic Society (NELS 34)*. Volume 1. Amherst: GLSA. 147-162.

Brown, Jason, Karsten Koch, and Martina Wiltschko. 2005. On Certain Unexpected Gaps in Transitive Paradigms and their Implication. In J.C. Brown, Masaru Kiyota and Tyler Peterson, eds. *Papers for the 40th International Conference on Salish and Neighboring Languages*. Vancouver: UBC Working Papers in Linguistics 16. 65-88.

Chomsky, Noam. 1995. The Minimalist Program. MIT Press, Cambridge, MA. (Chapter 4)

Davis, Henry. 1999. Subject inflection in Salish. In M. Caldecott, S. Gessner, and E. Kim, eds. *Current Research on Language and Linguistics*. Vancouver, B.C.: UBC WPL 1. 181-240.

Davis, Henry. 2000. Remarks on Proto-Salish Subject Inflection. *International Journal of American Linguistics* 66: 499-520.

Davis, Henry, and Lisa Matthewson. To appear. Issues in Salish syntax and semantics. *Linguistics and Language Compass*.

Kinkade, M. Dale. 1992. Salishan languages. In: *International Encyclopedia of Linguistics* (Bright, William, ed.). New York: Oxford University Press. 359-362.

Kroeber, Paul D. 1997. Relativization in Thompson Salish. *Anthropological Linguistics* 39(3):376-422.

Kroeber, Paul D. 1999. *The Salish Language Family: Reconstructing Syntax*. Lincoln: University of Nebraska Press.

Mithun, Marianne. 1999. *The Languages of Native North America*. Cambridge: Cambridge UP.

The Morning and the Evening Prayer, And the Litany, With Prayers and Thanksgivings, Translated into the Neklakapamuk Tongue, for the Use of the Indians of the St. Paul's Mission, Lytton, British Columbia. 1878. Victoria, B.C.: St. Paul's Mission Press.

Newman, Stanley. 1979. A history of the Salish possessive and subject forms. *International Journal of American Linguistics* 45: 207-223.

Newman, Stanley. 1980. Functional changes in the Salish pronominal system. *International Journal of American Linguistics* 46: 155-167.

Selkirk, Elizabeth, and Angelika Kratzer. 2007. Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24(2-3): 93-135.

Stemberger, Joseph Paul. 1984. Speech error collection and fieldwork: some Choctaw speech errors. *International Journal of American Linguistics* 50(3): 345-349.

Thompson, Laurence C., and M. Terry Thompson. 1992. *The Thompson Language*. Missoula: University of Montana Occasional Papers in Linguistics 8.

Thompson, Laurence C. and M. Terry Thompson. 1996. *Thompson River Salish Dictionary*. Missoula: University of Montana Occasional Papers in Linguistics 12.

Wiltschko, Martina. 2006. On ergativity in Halkomelem Salish (and how to split and derive it). In Alana Johns, Diane Massam and Juvenal Ndayiragije, eds. *Ergativity*. Dordrecht: Kluwer. 197-227.

Wiltschko, Martina. 2008. Person hierarchy effects without a person hierarchy. In G. Hrafn Hrafnbjargarson, R. d'Allessandro, and S. Fischer, eds. *Agreement Restrictions*. Berlin, New York: Mouton de Gruyter. 281-314.