What does being a noun or verb mean?

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Two ways of dealing with linguistic universals and linguistic diversity

- **First approach:** An a priori guideline

Principle (Methodological Universalism)

If a feature/head is in one language, it's in all languages (Cinque & Rizzi, 2008)

- **Second approach:** It's an empirical issue …(c.f. CoreGram project, Müller 2015; see also Haspelmath 2007)

Principle (Methodological Minimalism)

All sorts and features included in the grammar of a language require positive evidence

Question

Is there evidence for part of speech information in all languages?

How to justify part of speech information

- Part of speech information: justified by constraints on co-occurrence
  - ▸ Syntactic selection: certain verbs must co-occur with PPs (Pollard & Sag, 1987)
  - ▸ Inflectional selection: nouns co-occur with different inflectional suffixes than verbs
- Koenig & Michelson (2014): No SYN feature in Oneida (Northern Iroquoian):
  no syntactic selection $\Rightarrow$ no ARG-ST/VAL features $\Rightarrow$ no HEAD feature $\Rightarrow$ no syntactic POS
- But maybe Oneida has morphological POS (Evans, 2000)
- This talk:
  - ▸ No <u>morphological</u> part of speech <u>in the grammar</u> of Oneida either
  - ▸ Inflectional constraints are sensitive to (1) differences in INDEX sort and (2) properties of semantic relations (KEY relation, Koenig & Davis 2006)

Grammatical and meta-grammatical parts of speech

- Everybody loves nouns and verbs, ...but for different reasons (Cinque & Rizzi, 2008; Croft, 2001; Dixon, 2009)
- Critical to distinguish grammatical and meta-grammatical parts of speech

(1) Examples of <u>grammatical</u> POS constraints:
$$\left[\text{...HEAD } \textit{noun} \right] \Rightarrow \left[\text{...ARG-ST ...} \right]$$
$$\left[\text{...HEAD } \textit{verb} \right] \Rightarrow \left[\text{...INFL ...} \right]$$

(2) <u>Meta-grammatical</u> morphological POS constraints:
$$\left(\left[\text{...CONT ...} \right] \Rightarrow \left[\text{...HEAD } \textit{verb} \right] \right) \wedge$$
$$\left(\left[\text{...HEAD } \textit{verb} \right] \Rightarrow \left[\text{...INFL ...} \right] \right)$$
$$\vdash / \models \left[\text{...CONT ...} \right] \Rightarrow \left[\text{INFL ...} \right]$$

Oneida metagrammatical parts of speech

> **Claim**
>
> *Oneida morphological ⌐nouns¬ and ⌐verbs¬ are metagrammatical labels: they are useful for comparative purposes, but not part of the grammar of Oneida*

> **Claim**
>
> *Two kinds of semantic properties are relevant for Oneida morphology: properties of indices (what kind of entity is described by a lexical item) and properties of the semantic relation that helps describe that entity*

(3) $\left[\text{CONT} \left[\text{IND} \dots \right] \right] \Rightarrow \left[\text{INFL} \dots \right]$

(4) $\left[\text{CONT} \left[\text{KEY} \dots \right] \right] \Rightarrow \left[\text{INFL} \dots \right]$

Outline

1. Traditional classification of parts of speech in Oneida
2. Ontological sorts of nouns and verbs in Michelson & Doxtator (2002)
3. Inflection and ontological sorts
4. Inflection and semantic relations
5. The orthogonality of the two semantic classifications
6. Whither relational nouns?
7. Conclusion

Outline

Nouns and verbs in Iroquoian linguistics

(5)

$$pos$$

morphologically-inactive   morphologically-active
(=particles)

noun verb
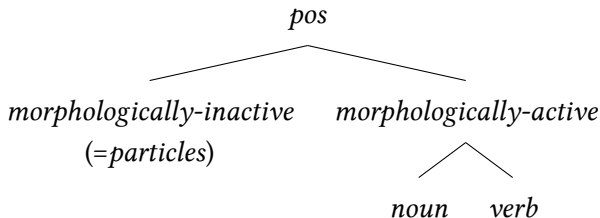
(6) $[_{Word}\ \mathbf{Pro_{NPF/POSS}}\ [_{Stem}\ N_{base}\text{-}\textsc{nsf}\ ]\ ]$

(7) $[_{Word}(Prepro\text{-})\mathbf{Pro_V}\text{-}[_{stem}\ V_{base}\text{-}\textsc{asp}]]$

(8) né· katiʔ wí· thikʌ́ **w-ʌhnisl-a·té·**
well then it's that 3z/N.SG.A-day-exist:STV

tsh-a-hy-ahtʌ·tí·　　　　| *ak-nulhá·* |　　kháleʔ
COIN-FACT-3M.DU.A-leave:PNC | 3FZ.SG>1SG-mother | and

lake-ʔníha　　né· kwí· thikʌ́ **yo-aʔkaláshʌ** kwí·
3M.SG>1SG-father so it's that 3z/N.SG.P-evening

ʌ-ts-yakw-ate-khw-u·ní·　　　　| *o-sahé·t-aʔ* | kwí·
FUT-REP-1EX.PL.A-SRF-food-make:PNC | NPF-bean-NSF |

waʔ-kni-naʔtsy-iha·l-ʌ́·　　　　né· kwí· **ʌ-ts-yákwa-k-eʔ**
FACT-3FZ.DU.A-kettle-hang-PNC so it's FUT-REP-1EX.PL.A-eat-PNC

| nʌ |　| **ʌ-ts-yakw-ate-khw-u·ní·** |　　　　　　**yo-aʔkáláshʌ**
| when |　| FUT-REP-1EX.PL.A-SRF-food-make:PNC | 3z/N.SG.P-evening

'Well anyway that day when my mother and my father went away,
for our supper, the two of them [Rina and Rita] boiled beans [for
soup], that's what we would eat when we have our supper.' (Norma
Kennedy, Worms in the Soup, recorded 2009)

Pronominal prefixes in Iroquoian

- All morphologically active words have a pronominal prefix
- They reference up to two animate arguments
- A default third singular zoic prefix is used when there is no animate argument
- Three main paradigm classes:
  - Portmanteau-like "transitive" prefixes,
  - "Intransitive"
    - ★ Agent prefixes
    - ★ Patient prefixes

Pronominal prefixes and parts of speech

- Pronominal prefixes on nouns do not begin with a glide

(9) né· s né· thikʌ́ kítkit **o**-stó·sl-iʔ ya·wét né·
it's that that chicken 3Z/N.SG.P-feather-NSF like it's

yako-t-uny-á·-t-u | **o**-kʌ́h-aʔ | . Ó·ts,
3FI.P-SRF-make-JN-CAUS-STV | 3Z/N.SG.P-blanket-NSF | Gee

| **yo**-ʔtalíhʌ s kwí· | né· thi·kʌ́.
| 3Z/N.SG.P-warm[STV] | it's that

'she made kind of like a blanket out of chicken feathers. Gee it was
warm.' (P. Cornelius, 307)

Outline

Determining the ontological sorts of traditional nouns and verbs in Oneida

1. Determine the ontological sorts of underived verb entries in Michelson & Doxtator (2002)
   v.a/v.s/v.m. entries

2. Determine the ontological sorts of underived nouns and derived nouns in Michelson & Doxtator (2002) ($\simeq$ 1,000 entries)
   = *n./N* vs. *v.>n.* or *V>N* entries

- Underived verbs denote events, states, or Kimian states (Maienborn, 2005) = **time-conditioned descriptions (*tc-index* sort)**

- Underived nouns denote a wide variety of sorts of entities; none of them are time-conditioned
  = **non-time-conditioned descriptions (*non-tc-index* sort)**

Speculation

Verbs, across languages, are more ontologically coherent than nouns

The ontological diversity of underived nouns in Oneida

(10)   ABSTRACT CONCEPTS *-yanlʌhsl-* 'law', *-kal-* 'value, worth';
   ANIMALS *oskanu·tú·* 'deer', *-itsy-* 'fish';
   BODY PARTS *-ʌʔnahs-* 'tongue', *-(w)yahutsh-* 'wing';
   CLOTHING *-lisl-* 'pantleg, *-aʔkohs-* 'skirt';
   COLOURS *-tsiʔnkwal-* 'yellow', *-luhy-* 'blue';
   EMOTIONS OR QUALITIES *-atlaʔsw-* 'luck', *-elyʌʔt-* 'intention, purpose';
   FOOD *-lan-* corn soup, *-ʔwahlu-/-ʔwahl-* 'meat';
   HOUSEHOLD ITEMS *-ks-* 'dish, plate, bowl', *-naʔtsy-* 'pail, pot, kettle';
   SOCIAL RELATIONS *-hwatsil-* 'family', *-nahkw-* 'marriage';
   NATURAL FORMATIONS *-nyatal-* 'lake', *-naw-* 'swamp';
   PLANTS *-hnanaʔt-* 'potato', *ohnéhtaʔ* 'evergreen, pine';
   PEOPLE *-wil-* baby, *Kayʌʔkeha·kà·* 'Mohawk';
   TIME INTERVALS *-ʌhnishl-* 'day, weather', *-ohsl-* 'year, winter';
   LOCATIONS OF A SOCIAL NATURE *-nat-* 'town, village';
   PLAY *-kal-* 'story', *-alhyohkw-* 'sinker, ring, hoop';
   SENSES *-ahuhs-* 'sense of hearing', *-asl-/-sl-* 'odor/smell';
   TOOLS *-aʔshal-* 'knife, blade', *-nuwal-* 'needle, pin';
   WEATHER *nyhʌt-* 'snow', *-atshat-* 'fog, steam'

Ontological sorts of derived nouns

- Several different processes for deriving nouns from verbs (Koenig & Michelson, 2020)
- Derivational processes preserve a strictly canonical association between inflectional class and ontological sorts (Spencer, 2005; Corbett, 2012)
  - ▸ For most, the derivation follows inflection (mismatch between derived sort and inflection): base + "verbal" inflection ↦ derived word
  - ▸ For some, the derivation precedes inflection (match between derived sort and inflection): base ↦ derived base + "nominal" inflection

(11) *yotsheʔtʌ́·tuheʔ*
yo-tsheʔt-ʌʔtu-heʔ
3Z/N.SG.P-jar-suspend-HAB
'pear'

(12) *owistóhsliʔ*
o-**wisto-hsl**-iʔ
3Z/N.SG.P-be.cold-NMZR-NSF
'butter'

The cost of ontological purity: a richer ontology

- Nouns and verbs in traditional Iroquoian linguistics are meta-grammatical labels of entries with distinct index sorts
- To maintain that nouns denote non-time conditioned descriptions we need to assume that derived nouns describe a different sort of entity than their stative verb source which denotes a time-conditioned description

(13)   a.   *-nolukhw-a-hsl-*
            love-JN-NMZR

       b.   *-atehʌ-hsl-*
            be.ashamed-NMZR

- $\simeq$ assuming that the denotation of nomimalized predicates is different from that of predicates (Cocchiarella, 1978; Chierchia & Turner, 1988; Francez & Koontz-Garboden, 2015)
- $[\![Shame_N]\!]$: the set of all (ordered) degrees of shame

Outline

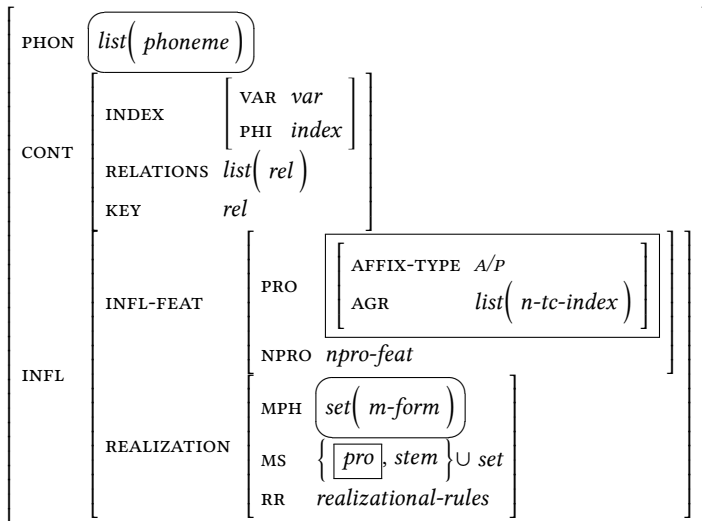# Inflectional properties sensitive to ontological sorts

	Inflectional property	*Sort*
S1	**Some pronominal prefixes do not have a glide word-initially**	**Non-time-conditioned**
S2	**Pronominal prefixes can have a word-initial glide**	**Time-conditioned**
S3	Negation involves the use of the negative particle *yah* together with the particle *tekʌ́*	Non-time-conditioned
S4	Negation involves the use of the negative particle *yah* together with the prepronominal prefix *teʔ-*	Time-conditioned
S5	Bases can occur in one aspect or all three aspects	Time-conditioned

Table: Inflectional properties that target ontological sorts

Morphologically active lexical signs

$$
\begin{bmatrix}
\textsc{phon} & \boxed{list\big(\,phoneme\,\big)} \\[2ex]
\textsc{cont} & \begin{bmatrix}
\textsc{index} & \begin{bmatrix} \textsc{var} & var \\ \textsc{phi} & index \end{bmatrix} \\[2ex]
\textsc{relations} & list\big(\,rel\,\big) \\[1ex]
\textsc{key} & rel
\end{bmatrix} \\[6ex]
\textsc{infl} & \begin{bmatrix}
\textsc{infl-feat} & \begin{bmatrix}
\textsc{pro} & \begin{bmatrix} \textsc{affix-type} & A/P \\ \textsc{agr} & list\big(\,n\text{-}tc\text{-}index\,\big) \end{bmatrix} \\[3ex]
\textsc{npro} & npro\text{-}feat
\end{bmatrix} \\[5ex]
\textsc{realization} & \begin{bmatrix}
\textsc{mph} & \boxed{set\big(\,m\text{-}form\,\big)} \\[1ex]
\textsc{ms} & \big\{\,\boxed{pro}\,,\,stem\,\big\} \cup set \\[1ex]
\textsc{rr} & realizational\text{-}rules
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

- NPRO are inflectional features relevant for aspect or noun suffixes and pre-pronominal prefixes

An example of a sortally restricted inflectional constraint

- The absence of glides for nominal pronominal prefixes holds of all relevant agent, patient, and transitive prefixes
  $\Rightarrow$ not a property of particular paradigms or exponents: it is a morphophonological constraint

1	2	3	4	5	6	7	8
Negative	Translocative	Dualic	Factual	Cislocative	Factual	**Pronominal**	Stem
Contrastive	Factual		Optative	Repetitive	Optative	Factual	
Coincident			Future			Optative	
Partitive							

Table: Position classes of Oneida "inflectional" prefixes

$$\begin{bmatrix} \text{CONT} & \begin{bmatrix} \text{INDEX} & \textit{non-tc-index} \end{bmatrix} \\ \text{INFL}|...|\text{MPH} & \left\{ \begin{bmatrix} \text{PH} & \left\langle \textit{glide} \right\rangle \oplus \boxed{1} \\ \text{PC} & 7 \end{bmatrix}, \begin{bmatrix} \text{PC} & 8 \end{bmatrix} \right\} \cup \textit{eset} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{PHON} & \boxed{1} \oplus \textit{list} \end{bmatrix}$$

Outline

Inflectional properties sensitive to KEY relation

	Inflectional properties	*Relation*
R1	Reflexive prefixes can attach to the base	Polyadic relation (except possession)
R2	Transitive pronominal prefixes can attach to the stem	Polyadic relation (except possession)
R3	Pronominal prefixes reference the possessor and only the possessor	Possession
R4	**Agent vs. Patient paradigm class is determined by the (in)alienability of the possession relation**	**Possession**

Table: Inflectional properties that target KEY relation

An example of inflectional constraints restricted to certain KEY relations

- Whether a lexical entry is assigned to the Agent or Patient paradigm class is motivated, but not predictable (Michelson, 1991; Koenig & Michelson, 2015)
- If a word's KEY is a possession relation, Agent/Patient class membership is predictable from the (in)alienability of the relation
- These constraints apply to possessive ⌐nouns¬ and ⌐verbs¬ of possession (i.e., irrespective of INDEX sort)

(14) $\begin{bmatrix} \text{CONTENT} \begin{bmatrix} \text{KEY } alien\text{-}poss\text{-}rel \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{...PRO} \begin{bmatrix} \text{AFFIX-TYPE } P \end{bmatrix} \end{bmatrix}$

(15) $\begin{bmatrix} \text{CONTENT} \begin{bmatrix} \text{KEY } inalien\text{-}poss\text{-}rel \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{...PRO} \begin{bmatrix} \text{AFFIX-TYPE } A \end{bmatrix} \end{bmatrix}$

Possessed nouns

(16) **laó**-nhwal-eʔ
3M.SG.POSS-fur-NSF
'his fur'

(17) **la**-ʔnyú-·ke
3M.SG.A-nose-LOC
'his nose'

- N.B.: The fact that a noun is possessed is only "visible" because of the form of the pronominal prefix

Outline

Inflectional constraints sensitive to <u>both</u> ontological sorts and KEY relation

	Inflectional property	*Sort*	*Relation*
B1	**Possessive pronominal prefixes can attach to the stem**	**Non-time-conditioned**	**Possession**
B2	Either nominal or verbal pattern for sentential negation	Not-time-conditioned	Polyadic

Table: Inflectional properties that target both ontological sort and KEY relation

An example of a sort and KEY restricted inflectional property

- In Oneida, pronominal prefixes on alienably possessed nouns are a subtype of Patient prefixes

	C-stems		
	A	P(V)	P(poss)
...	...	...	...
3M.SG	la-	lo-	lao-
3M.DU	ni-	loti-	laoti-
3M.PL	lati-	loti-	laoti-
3FZ.SG	ka-	yo-	**ao-**
3FZ.DU	kni-	yoti-	**aoti-**
...	...	...	...

Table: A subset of Agent, Patient and Possessive Patient prefixes for C-stems

Modeling Possessive prefixes
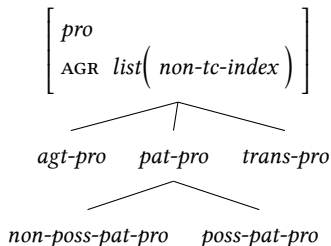
Figure: A hierarchy of *pro* morphosyntactic features

$$(18) \quad \left[\text{INFL|INFL-FEAT|PRO} \begin{bmatrix} \text{AFFIX-TYPE} & P \\ \text{AGR} & \langle \textit{non-tc-index} \rangle \end{bmatrix} \right] \Rightarrow \left[\text{INFL|REALIZATION|MS} \; \{ \textit{pat-pro} \} \cup \textit{set} \right]$$

$$(19) \quad \left[\text{SEM} \begin{bmatrix} \text{INDEX} & \textit{non-tc-index} \\ \text{KEY} & \textit{alien-poss-rel} \end{bmatrix} \right] \Rightarrow \left[\text{INFL|...|MS} \; \{ \textit{poss-pat-pro} \} \cup \textit{set} \right]$$

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4. Inflection and semantic relations
5. **Whither relational nouns?**
6. Conclusion

Against a mixed categories analysis of kinship terms

- Kinship terms in Oneida (e.g., *ak-nulhá·* 'my mother') have:
  - ▸ Some inflectional properties of ⌜nouns⌝ (no aspect suffixes, glideless pronominal prefixes)
  - ▸ Some inflectional properties of ⌜verbs⌝ (reflexive prefixes are possible, transitive prefixes)

- Koenig & Michelson (2010) analyze kinship terms as a mixed category à la Malouf (2000)

- But they must stipulate which nominal and which verbal properties kinship terms have

- Our new approach to POS <u>explains</u> the behavior of kinship terms:
  - ▸ They describe non-time-conditioned entities (one member of the kin relation) ⇒ they have inflectional properties appropriate for entries with *non-tc-index*
  - ▸ Their KEY is a kinship relation ⇒ they have the inflectional properties of polyadic relations

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6. **Conclusion**

Does Oneida have a morphological noun/verb distinction?

- Wrong question to ask:
  - <u>Its grammar</u> does not include a noun vs. verb distinction like English does (≠ Langacker (1987); Chaves (2013)), as it classifies lexical items along 2 <u>semantic</u> dimensions
    - ★ The sort of INDEX they include
    - ★ The sort of KEY relation they include
  - <u>But</u> Oneida inflectional constraints partition lexical items along a dimension typical of canonical nouns and verbs
    ⇒ it can be compared to other languages in terms of a <u>meta-grammatical</u> distinction between ⌜nouns⌝ and ⌜verbs⌝
- Discussions about universals of parts of speech or limits of variation often miss the possible distinct status of labels used in language descriptions
- ...and this matters for talk of universality or linguistic diversity

How different is inflection from argument realization?

- No SYN, no morphological *pos*! Is Oneida <u>that</u> different?
- Tempting to analyze pronominal prefixes just like argument realization: Linking constraints $\simeq$ those in Davis (2001) or Koenig & Davis (2003)
- But realizational morphology ≠ argument realization!
    - ▸ Linking relates semantic arguments to *index* not *synsem*
    - ▸ No relation or operation on members of AGR (≠ ARG-ST/VAL)
- Oneida inflection is quite complex and language-specific, but that's morphology
- Classification induced by inflection is actually strictly canonical, which is unusual!
- A classification of lexical items based on index sorts or polyadicity is not unusual, but the fact that both are at play and work orthogonally from each other in Oneida is striking

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Different kinds of inflectional constraints

- Constraints relating KEY relation (Koenig & Davis, 2006) to AGR indices: Linking for head-marking languages
- Constraints on values of AFFIX-TYPE: paradigm class assignment
- Constraints relating MPH (morphs) to PHON: Morphophonological rules
- Constraints relating PRO features to sorts of morphosyntactic feature *pro*: restricting information of relevance to exponence (ϕ-features and paradigm information)
- RR: many-to-many association between inflectional features and morphs (Crysmann & Bonami, 2016)

Partialling out Oneida inflectional constraints

$$
\left[\text{INFL} \left[\begin{array}{ll} \text{INFL-FEAT} & \left[\begin{array}{ll} \text{PRO} & \textit{pro-feat} \\ \text{NPRO} & \textit{npro-feat} \end{array} \right] \\ \text{REALIZATION} & \left[\text{MS} \ \left\{ \textit{pro} \right\} \cup \textit{set} \right] \end{array} \right] \right]
$$

- PRO: Inflectional features shared by ⌜nouns⌝ and ⌜verbs⌝
- NPRO: Inflectional features where ⌜nouns⌝ and ⌜verbs⌝ differ (different subtypes of *npro-feat* depending on the lexical entry's INDEX sort)
- Morphophonology: Where ⌜nouns⌝ and ⌜verbs⌝ differ
- Paradigm class is
    - where the KEY relation makes a difference (intransitive vs. transitive))
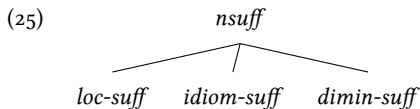   - where both the INDEX sort and KEY relation make a difference (possessive prefixes)

(20)

$$npro\text{-}feat$$

$$time\text{-}cond\text{-}npro \quad n\text{-}time\text{-}cond\text{-}npro$$
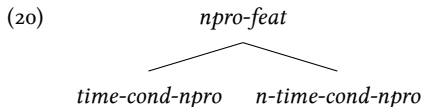
(21) $\left[\text{SEM} \; \left[\text{INDEX} \; tc\text{-}index \right] \right] \Rightarrow \left[\text{INFL}|\text{INFL-FEAT}|\text{NPRO} \; time\text{-}cond\text{-}npro \right]$

(22) $\left[\text{SEM} \; \left[\text{INDEX} \; non\text{-}tc\text{-}index \right] \right] \Rightarrow \left[\text{INFL}|\text{INFL-FEAT}|\text{NPRO} \; non\text{-}time\text{-}cond\text{-}npro \right]$

(23) $time\text{-}cond\text{-}npro := \begin{bmatrix} \text{PREPRO} & set\left(prepro \right) \\ \text{ASP} & aspect \\ \text{ACTIVE} & boolean \end{bmatrix}$

(24) $non\text{-}time\text{-}cond\text{-}npro := \left[\text{NOUN-SUFFIX} \; nsuff \right]$

(25)

$$nsuff$$

$$loc\text{-}suff \quad idiom\text{-}suff \quad dimin\text{-}suff$$

Complex interaction of sort and KEY relations in inflection

- Possessed nouns can be incorporated into a small set of stative verbs (Koenig & Michelson, to appear)

(26) Kʌh   né·   n-aʔte-**ye**-ká·l-a-h<u>se</u>ʔ.
this, yea assertion PART-DL-**3FI.A**-eye-size.of-STV.PL
'Her eyes were THIS big.'

(27) yah teʔwé·neʔ tsiʔ   ni-**hoti**-núhs-a-hseʔ   tsiʔ nú·
it's incredible   how PART-**3M.DP.P**-house-size.of-STV.PL where
ni-**hati**-nákle-ʔ   kʌ·,
PART-3M.PL.A-reside-STV y'know
'it's incredible how big their houses were where they lived,'

Possessed noun incorporation: time-conditioned index vs. KEY possession relation

- Possession relation becomes the KEY of the incorporation of a possessed noun
  - ▸ Agent and Patient paradigm class is based on (in)alienability
  - ▸ Possessor is referenced by pronominal prefix
- NPRO inflection is determined by the *tc-index* of the verb: the combination includes aspect suffixes and pre-pronominal prefixes

(28) $\left[\text{CONTENT} \left[\text{RELS} \; \boxed{2} \right] \right] \wedge \text{member}\left(\boxed{1}\textit{poss-rel}, \boxed{2} \right) \Rightarrow \left[\text{CONTENT} \left[\text{KEY} \; \boxed{1} \right] \right]$

(29) $\left[\text{SEM} \left[\text{INDEX} \; \textit{tc-index} \right] \right] \Rightarrow \left[\text{INFL}|\text{INFL-FEAT}|\text{NPRO} \; \textit{time-cond-npro} \right]$

(30) $\textit{time-cond-npro} \Rightarrow \begin{bmatrix} \text{PREPRO} & \textit{set}\left(\textit{prepro} \right) \\ \text{ASP} & \textit{aspect} \\ \text{ACTIVE} & \textit{boolean} \end{bmatrix}$