PF Incorporation: Evidence from Wakashan

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1. The problem

- head movement is strictly local (Travis 1984, Baker 1988)

QUESTION: is this locality determined by hierarchical or linear adjacency?
(Bobaljik 1994, Lasnik 2000, Embick and Noyer 2001)

- the Head Movement Constraint (Travis 1984) determines that a head incorporates
  only into the first head which c-commands it (Baker 1988):

(1) XP
   X YP
   ZP Y
   Z

Baker (2000):
"a structure like A_x + V [V, t, N] violates strict locality conditions
on head movement…. [O]ne cannot incorporate an adjectival
modifier of a noun stranding the head noun itself…"

- the problem: Nuu-chah-nulth (Wakashan family)

(2) a. ṣuṣaq ii-p-ʔĩs
    news-obtain-3.IND
    Robin
    Robin received news.

2. Transitive predicates in Nuu-chah-nulth

- transitive predicates in Nuu-chah-nulth fall into two distinct classes (Stonham and Yiu

(i) free roots, which I will term "independent" predicates
(ii) a set of bound roots, which I will term "affixal" predicates.

- Affixal predicates may not stand alone, and must be suffixed to either the expletive
  morpheme ʔə or to their object. This is demonstrated with the verb ʔəap "to buy":

(3) a. *ʔəap-mit-ʔĩs čakup maḥtũ
    buy-PST-3.IND man house
    A man bought a house.

b. maḥtũʔaʔamit-ʔĩs čakup
   house-buy-PST-3.IND man
   A man bought a house.

c. ṣuəʔamit-ʔĩs čakup maḥtũ
   ʔəap-mit-ʔĩs čakup
   ʔəap-buy-PST-3.IND man house
   A man bought a house.

- Independent predicates, in contrast, may occur directly in clause-initial position and
  are incompatible with suffixation to the ʔə morpheme or to an object. This is shown
  with maałəʔ "to buy":

(4) a. maałəʔ "iriš čakup maḥtũ
    maakuk-mit-ʔĩs čakup maḥtũ
    buy-PST-3.IND man house
    A man bought a house.


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1 Nuu-chah-nulth (nuusčən̓tn̓) is an endangered Southern Wakashan language spoken on
Vancouver Island, British Columbia, Canada. It was previously referred to as “Nootka”; a
name which speakers of the language reject. All data presented here is from the
Ahousaht (ʔaʔał̓u̓ms̓ən̓) dialect, one of approximately 14 dialects of the language.

2 Affixal predicates have traditionally been referred to as “lexical suffixes” (cf. Sapir and
For both affixal and independent transitives, it is impermissible for the predicate to be suffixed to the subject.

(5)  a. * čakup-ʔnap-mit-ʔiš mał̌ťii
    man-buy-PST-3.IND house
    A man bought a house.

b. * mał̌ťii-maakuk-mit-ʔiš čakup
   house-buy-PST-3.IND man
   A man bought a house.

(6) Summary of the basic data

<table>
<thead>
<tr>
<th></th>
<th>affixal predicates</th>
<th>independent predicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>occur independently?</td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>suffixation to mał̌ťii?</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>suffixation to object?</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>suffixation to subject?</td>
<td>×</td>
<td>×</td>
</tr>
</tbody>
</table>

2.1 Affixal predicates

- There are approximately four hundred affixal transitive predicates in Nuu-chah-nulth (cf. Rose 1981, Davidson 2002).
- No independent means of distinguishing affixal and non-affixal predicates
  - There is no unifying feature in the lexical semantics of affixal predicates (Davidson 2002)
  - The class of affixal predicates is phonologically diverse: polysyllabic, monosyllabic, non-syllabic

(7) Polysyllabic affixal predicates
   a. -ʔińi "waiting for"
   b. -ʔińi:uk "looking after"
   c. -ʔińi:ka "resembling"

(8) Monosyllabic affixal predicates
   a. -q̌u "trying to locate"
   b. -cuu "being inside a container"
   c. -ńi "being made of"

(9) Non-syllabic affixal predicates
   a. -q̌ "travelling in a vessel with"
   b. -ǩš "asking for"

- What all affixal predicates have in common is that they are bound morphemes. These predicates are suffixed to either:
  (i) their object; or
  (ii) the expletive morpheme ʔu-

QUESTION: What mechanism attaches the affixal predicate to its host?

2.2 The proposal

morphe-phonological requirements of affixal predicates
- Affixal predicates in Nuu-chah-nulth differ from independent predicates in being lexically specified as [suffix]
- [suffix]: they require a morphological host with which they may form a phonological word (cf. Lasnik’s (1981) Stranded Affix Filter, Bobaljik (1994), Bočković (2001), Ackema & Neeleman (2003).)

claims:
1. Attachment of the affixal predicate to its host is accomplished in the post-syntactic component PF. (§3)
2. Head movement: movement of an X̂₀, yielding an X̂ (§4)

3. A PF analysis

claim: Attachment of the affixal predicate to its host is accomplished in the post-syntactic component PF

(i) The [suffix] requirement is satisfied by Move or Merge
(ii) Application of Move is insensitive to syntactic constituency
(iii) Application of Move is insensitive to syntactic category
(iv) Application of Move has no LF effect.
(v) There is a phonological dependency between predicate and host.

3.1 Prediction #1: the suffixation requirement is met by Move or Merge

- Chomsky (1995, 2000) proposes that features are checked in two ways: Move or Merge.

3 An alternative is that the affixal predicates are specified as [affix], and the directionality of their attachment is determined by a language-specific linearization operation.

b. Merge: I wonder [whether] Q [he left yet]

• parallel results are found with Nuu-chah-nulth affixal predicates: Nuu-chah-nulth allows either Move or Merge for satisfying [suffix]:

(12) input to PF: the [suffix] requirement is not satisfied

        VP
       /   \
   lip ___  taana
      /     /  
  receive 
   money

(13) The Move option

a. taanaq̕iˈəx̺k
   taana-iipˈək-k
   money-receive-TEMP-2sg.Q
   Did you receive money?

b. 

(14) The Merge option

a. ‘ʔu-ʔəx̺k
   ‘ʔu-iipˈək-k
   ∅-receive-TEMP-2sg.Q
   money
   Did you receive money?

b. 

• ungrammaticality occurs if neither of these options apply.

(15) * ‘ʔ̱pˈək-k
   receive-TEMP-2sg.Q
   money
   Did you receive money?

• ungrammaticality occurs if both of these options apply:

(16) a. * ‘ʔu-taana-ipˈək-k
    ∅-money-receive-TEMP-2sg.Q
    Did you receive money?

b. * taana-ʔu-ipˈək-k
    money-∅-receive-TEMP-2sg.Q
    Did you receive money?

• Parallel results are found with syntactic feature-checking: the strong Q feature must be checked, and it must be checked economically.

(17) a. * I wonder [he left yet]
   b. * I wonder whether did [he leave yet]

Early Move/Merge: deriving the apparent subject-object asymmetry

• under a vP-shell analysis (Koizumi 1995), only objects occur within the VP domain.

(18) vP
    NP  v
subject ....
    VP
    V
object

• early application of Move/Merge:
  - preference to perform computations as quickly as possible: eliminate uninterpretable features at once (Chomsky 1999)
  - if the [suffix] requirement must be met within the VP domain, then this will appropriately exclude subjects from serving as hosts for the affixal predicates.

3.2. Prediction #2: insensitivity to syntactic constituency

• the Coordinate Structure Constraint (CSC) is obeyed in syntactic movement:

(19) a. ʔnaač̱p̱iɪ̱hɑ̱mɪ̱tiś
    ʔaak*ʔəx̺ʔəhəūʔiś
    maʔṯəq̱ac
    ʔnaač̱p̱iɪ̱ha-mit-siś
    ʔaak*ʔəx̺ʔəhəūʔiś
    maʔṯəq̱ac
    catch.glimpse-of-PST-1sg.IND
    girl and boy
    I caught a glimpse of a girl and a boy.

b. ʔaacač̱iˈʔi̱hkt
   ʔnaač̱p̱iɪ̱ha
   ʔaacač̱iˈʔi̱hkt
   who-OBJ-PST-2sg.Q
   catch.glimpse.of
   Who did you catch a glimpse of?

4 Thanks to Christine Ravinski for eliciting these examples for me.
the CSC is ignored in attaching an affixal predicate:

(20)  a. *who* Who did you catch a glimpse of and a boy?)
    b. who Go and buy flour and sugar!

the choice of host of an affixal predicate is determined by linear order: whichever word is first in the complement (Rose 1981, Yiu and Stonham 2000, Woo 2000, Woo and Wojdak 2001).

adjectives are selected as the host, rather than the modified noun:

(21)  a. who *Who are eating delicious apples.*
    b. *Who are eating delicious apples.*
    c. *Who are eating delicious apples.*

quantifiers are selected as the host, rather than the quantified noun:

(22)  a. who *Who are eating delicious apples.*
    b. *Who are eating delicious apples.*

3.3 Prediction #3: insensitivity to syntactic category

(24)  Potential hosts for the affixal predicate:
    a. noun
    b. adjective (21)
    c. quantifier (22)
    d. wh-word (23; 25)
    e. relative pronoun (26)
    f. verb (27)

(25)  *Wh-Inf Who did Louis buy?*
(26)  *Wh-Inf Who did Louis buy?*
(27)  *Wh-Inf Who did Louis buy?*

I dream you died.

 Prosperous (in +R+R+, +R+R+)-PST-2sg.ABS

Who did you catch a glimpse of and a boy?)

3.3 Prediction #3: insensitivity to syntactic category

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3.4 Prediction #4: no LF effect

- under a model in which LF effects are restricted to the narrow syntax, PF operations are predicted to have no semantic effects.
- no LF effect found with:
  (i) quantifier scope
  (ii) focus

3.4.1 Quantifier scope

- The surface order derived by PF movement has no consequence for quantifier scope.
- quantified subjects are ambiguous between wide and narrow scope over their objects if the object hosts the affixal predicate or if it does not.

(28) ʔunutaqíʔiš | lišuk | čaákupíiłh | munaan  
ʔu-taq-mi-ʔís | liš-u:k | čaákup-ʔi:\h  | munaan  
All the men were working on an engine. (both V∃ & Vv)

(29) munaataqíʔiš | lišuk | čaákupíiłh  
munaa-taq-mi-ʔís | liš-u:k | čaákup-ʔi:\h  
motor-fix[+L]-PST-3.IND | all-DUR | man-PL[+L]  
All the men were working on an engine. (both V∃ & Vv)

3.4.2 Focus

- there does not appear to be any interaction between focus and the surface position of the object.²
- the noun ʔiʔač’uk “flour” can be also focused when it hosts an affixal predicate or when it occurs as an independent word.

(30) Q: ʔuʔuʔaš | šunk“aa  
ʔu-ʔaš-ʔ | šunk“aa  
Ø-go-get[+L]-3.Q | sugar
Did he go get sugar?

(31) A: either of:

a. wík ʔuʔuʔaš | ʔiʔač’uk
wík ʔu-ʔaš-ʔís | ʔiʔač’uk
NEG Ø-go-get[+L]-3.IND | flour
No, he went to get flour.

b. wík ʔiʔač’uk-ʔís
wík ʔiʔač’uk-ʔís  
NEG flour-go-get[+L]-3.IND  
No, he went to get flour.

3.5 Prediction #5: phonological dependency

- a PF analysis predicts a phonological dependency between the two morphological elements involved.
- independent evidence for a phonological dependency between an affixal predicate and its host comes from these predicates’ ability to prosodically condition their morphological hosts (Sapir and Swadesh 1939, Davidson 2002, Kim and Wojdak 2002, Kim in prep).
- Affixal predicates may "subcategorize" for an obligatory vowel length or reduplication.
- for example, the predicate -sum "to want" triggers both reduplication [+R] and vowel shortening [+S] of the morpheme it is suffixed to:

(32) a. ʔuʔuʔaš | taana  
ʔu-sum-ʔís | taana  
Ø-want[+R +S]-3.IND | Louis money
Louis wants money.

b. tataqaʔuʔaš | taana-ʔís  
tauu-sum-ʔís | Louis money  
Ø-want[+R +S]-3.IND | Louis money
Louis wants money.

- both expletive (iPF) and non-expletive hosts are affected by the prosodic requirements of affixal predicates.

(33) a. ʔuʔuʔaš | yaxýak  
ʔu-hwaʔ-ʔí | yaxýak  
Ø-use[+L]-2sg.IMP.3OBJ | broom
Use the broom!

b. yaxýak-hwaʔ-ʔí  
yaxýak-hwaʔ-ʔí  
broom-use[+L]-2sg.IMP.3OBJ  
Use the broom!

- Each affixal predicate is associated with a characteristic pattern. The available patterns are illustrated in (34).

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² This is a tentative claim, as it relies on a more complete understanding of the mechanisms used in Nuu-chah-nulth to indicate focus. I leave this as a topic for future investigation.
(34) Patterns of prosodic conditioning imposed by affixal predicates

a. Neutral (no prosodic conditioning)  eg.  *hə-nuʔəxʷ "to find"

b. Long initial vowel  eg.  *hənu- "to use"

c. Reduplication with neutral vowel length  eg.  *həʔu-quo "to travel with"

d. Redup. with short initial vowel & long second vowel  eg.  *həʔum-sap "to depend on"

e. Redup. with neutral initial vowel & long second vowel  eg.  *həʔum-yaq "to cry for".

- lexically-specified properties of affixal predicates satisfied in PF:

(35)  a.  [suffix] morphological alignment
b.  [+R] reduplication-triggering
c.  [+L], [+S] vowel length conditioning

3.6 Summary

- morpho-phonological requirement of predicates met in PF: [suffix]
- PF operations sensitive to linear adjacency
- PF operations blind to syntactic constituency/category, no LF effect

QUESTION: What grammatical units do PF Move/Merge operate on?

some possibilities:
heads? (cf. Chomsky 1999, 2000; Boeckx & Stjepanovic 2001, etc.)
phrases? (cf. Chomsky 1999)
-phonological constituents (α, φ)?

4. Head movement

- the host for an affixal predicate must occur in its morphologically simplex form (Yiu and Storhnam 2000).
- nominal affixes are stripped from the root when it hosts an affixal predicate

(36)  a.  *həʔucaq-aʔiʔ  səʔaʔluus-ʔatθ kʷaʔmis
hə-caq-aʔiʔ  səʔaʔluus-ʔatθ kʷaʔmis
∅-busy_with+[+L]-3.IND place.name-from s.h.eggs-thing
The Ahousahts are busy with spawned herring eggs.

b.  kʷaʔmis-caqa-aʔiʔ  səʔaʔluus-ʔatθ
kʷaʔmis-caqa-aʔiʔ  səʔaʔluus-ʔatθ
s.h.eggs-busy_with+[+L]-3.IND place.name-from
The Ahousahts are busy with spawned herring eggs.

c.  *hə-caq-aʔiʔ  səʔaʔluus-ʔatθ kʷaʔ
∅-busy_with+[+L]-3.IND place.name-from s.h.eggs
The Ahousahts are busy with spawned herring eggs.

(37)  a.  həʔaʔluut-ʔaθ  səʔucaʔiʔ
həʔaʔhu-ʔaθ  səʔucaʔiʔ
∅-on_front-3.IND name.POSS-DET DEIC woman-DET
That woman’s got her name written on her front.

b.  səʔucaʔiʔ-həʔaʔhu-ʔaθ  səʔucaʔiʔ
name-∅-on_front-3.IND DEIC woman-DET
That woman’s got her name written on her front.

c.  *səʔucaʔiʔ-həʔaʔhu-ʔaθ  səʔucaʔiʔ
name.POSS-∅-on_front-3.IND DEIC woman-DET
That woman’s got her name written on her front.

The fact that this morphology-stripping reduces the host to a single morpheme is consistent with an analysis in which the host is an X.

(38) Predictions of a head movement analysis

(i) recursion: movement of a head yields a head, which can in turn be moved...
(ii) contrast with movement of phrasal constituents
(iii) mismatch with phonologically-defined constituents (α, φ)

4.1 Recursion

- a diagnostic for head movement is its recursive properties
- if movement of a head yields a head, then this movement is predicted to be recursive.
- in Nuu-chah-nulth, [host + affixal predicate] complexes are themselves available as hosts for other affixal predicates.

simple host:

host

suffix

(39) a.  maa ʔuʔaʔqwuʔiθ  yəʔolq wəʔən wiθaʔaθęθa
maa ʔuʔaʔqwuʔiθ  yəʔolq wəʔən wiθaʔaθęθa
∅ put.in.mouth-PERF-1pl gum NEG-purpose put.in.mouth-DUR
here, let’s put chewing gum in our mouth so we don’t have a sour taste in our mouth.

b.  maa ʔuʔaʔqwuʔiθ  wəʔən wiθaʔaθęθa
maa ʔuʔaʔqwuʔiθ  wəʔən wiθaʔaθęθa
∅ put.in.mouth-PERF-1pl gum NEG-purpose put.in.mouth-DUR
Here, let’s put chewing gum in our mouth so we don’t have a sour taste in our mouth.
complex host:

\[
\text{host} \text{ suffix}
\]

Let us put something sweet in our mouth.

\[
\text{host suffix}
\]

(40) a. \(\text{čam} \text{a-} \text{čuq} \text{-sič} \text{-} \text{čam}\) Let us put something sweet in our mouth.

\[
\text{3DO} \text{& XT6LLQ MDPDV}
\]

(41) "\(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\) We were served rotten-tasting spawned herring eggs by Mary.

\[
\text{MDPDV3DO&XT6LLQ MDPDV}
\]

(42) \(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\) We were served rotten-tasting spawned herring eggs by Mary.

\[
\text{LQO}[\text{suffix}]
\]

(43) \(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\) We were served rotten-tasting spawned herring eggs by Mary.

\[
\text{LQO}[\text{suffix}]
\]

(44) \(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\) We were served rotten-tasting spawned herring eggs by Mary.

4.2 Contrast with phrasal movement

- The behaviour of complex forms like "rotten-tasting" contrasts with that of phrasal elements. Modified XP's are not possible hosts for the affixal predicates.

\[
(45) \text{a. } \text{čam} \text{a-} \text{čuq} \text{-sič} \text{-} \text{čam}\)
\]

\[
\text{big-rock-take-PST-3.IND Louis}
\]

b. \(\text{čam} \text{a-} \text{čuq} \text{-sič} \text{-} \text{čam}\)

\[
\text{big-heavy-take-PST-3.IND Louis}
\]

(46) a. \(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\)

\[
\text{white-person-inside-3.IND}
\]

b. \(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\)

\[
\text{white-person-inside-3.IND}
\]

c. \(\text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\)

\[
\text{white-person-inside-3.IND}
\]

4.3 Mismatch with phonologically-defined constituents \((\sigma, \Phi)\)

- the host for a dependent predicate is a morphological constituent \(= \text{X}^0\)
- host \(=\) syllable: host can be mono- or poly-syllabic
- host \(=\) foot: host can be less than, equal to, or larger than a foot

\[
(46) \text{a. } \text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\)
\]

\[
\text{white-person-inside-3.IND}
\]

\[
(46) \text{b. } \text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\)
\]

\[
\text{white-person-inside-3.IND}
\]

\[
(46) \text{c. } \text{Mary} \text{a-} \text{čuq} \text{-sič} \text{-} \text{Mary}\)
\]

\[
\text{white-person-inside-3.IND}
\]

Summary of the analysis

- \(\text{X}^0\) elements are moved or inserted in order to satisfy the lexically-determined [suffix] requirement of predicates
- this process occurs outside the syntax, in PF
5. Comparison to alternative analyses

- I will argue against two alternative accounts of the Nuu-chah-nulth data:
  1. syntactic head movement (§5.1)
  2. PF filter: a "weak" phonology analysis of cliticization (§5.2)

5.1 Syntactic head movement

- Recent work (Stonham 1998, Stonham and Yiu 2000, Yiu and Stonham 2000, Davis and Sawai 2001) has analysed the dependency between affixal predicates and their objects as a case of syntactic incorporation.

- Some problems for a syntactic head movement analysis of Nuu-chah-nulth:
  - CSC is obeyed in syntactic movement, but ignored in attachment of the affixal predicate (§3.2)
  - Absence of LF effects (§3.4)
  - Sensitivity to linear adjacency

**Problem:** Linear selection of the host: Z "incorporates", rather than Y

(47) \[ \begin{array}{c}
  \text{XP} \\
  \text{X} \\
  \text{YP} \\
  \text{ZP} \\
  \text{Y} \\
  \text{Z} \\
\end{array} \]

- For example, the adjective "incorporates" rather than the noun, despite the fact that there is independent evidence that the noun is the head of the object (48a rather than 48b):

(48) a. \[ \begin{array}{c}
  \text{VP} \\
  \text{V} \\
  \text{NP} \\
  \text{AP} \\
  \text{N} \\
\end{array} \]

b. \[ \begin{array}{c}
  \text{VP} \\
  \text{V} \\
  \text{AP} \\
  \text{A} \\
  \text{N} \\
\end{array} \]

- Categorial restrictions on modification in Nuu-chah-nulth provide evidence for the headedness of adjective-noun combinations. According to Wojdak (2000, 2001) the following restrictions on argument modification hold:

(49) (i) Adjective + adjective modification is disallowed in Nuu-chah-nulth
(ii) Adjective + noun modification is permitted

Thus, it cannot be that the "incorporated" adjective is the head of the object phrase.

(50) \[ \begin{array}{c}
  \text{Nuu-chah-nulth} \\
  \text{VP} \\
  \text{V} \\
  \text{AP} \\
  \text{A} \\
  \text{N} \\
\end{array} \]

- **Conclusion:** A syntactic head movement analysis for Nuu-chah-nulth cannot account for how the host is selected according to linear (and not hierarchical) adjacency.

**Summary of problems for a syntactic head movement analysis**

<table>
<thead>
<tr>
<th>Linear selection of host</th>
<th>CSC violations</th>
<th>Absence of LF effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syntactic head movement</td>
<td>( \times )</td>
<td>( \times )</td>
</tr>
<tr>
<td>PF head movement</td>
<td>( \checkmark )</td>
<td>( \times )</td>
</tr>
</tbody>
</table>

5.2 PF filter

- Bošković (2001) argues for a "weak phonology" in which the operation Move cannot be applied in PF. Under his analysis of Serbo-Croatian clitics, PF is restricted to having a filtering effect on the output of the syntax.

**Question:** Could the Nuu-chah-nulth facts be accounted for under an analysis in which PF filters syntactic outputs?

- I will sketch two possible syntactic outputs, and argue that neither are amenable to an analysis in which PF merely filters outputs:

  (i) Object-raising (§5.2.1)
  (ii) No movement (§5.2.2)

5.2.1 The syntactic object-raising option

- When the affixal predicate is attached to an element from its object, OVS morpheme order is obtained.

(51) \[ \begin{array}{c}
  \text{VP} \\
  \text{V} \\
  \text{AP} \\
  \text{A} \\
  \text{N} \\
\end{array} \]

- A man bought a house.
6. Conclusions

5.2.2 The no-movement option

- this alternative account supposes that no elements have moved in VP at Spell-out to PF.

(54)  

- Under a "weak phonology" approach, this syntactic output could feed PF, where the affixal predicate could encliticize to the element which precedes it.

(53)  

- problems with this account:
  (i)  defining the target of movement:
       - linear selection (first word in object)
       - object lacks phrasal properties
  (ii)  absence of LF effects
  (iii)  insensitivity to syntactic constraint on movement (CSC)

problems with this account:
(i)  under Bošković's (2001: 84) proposal, PF merger of this type "cannot reorder elements; it simply puts two adjacent elements together forming a single word out of them." This would yield an incorrect morpheme order in Nuu-chah-nulth, since it would predict a [predicate-host] order rather than a [host-predicate] order.
(ii)  a PF filter analysis also fails to explain how the "dummy" host $\lambda_N$ is introduced.

6.1 Implications
1. Linearization operations at PF
- this analysis is compatible with the view that linearization operations are located at PF (Chomsky 1995 on Kayne 1994; Bobaljik 1994; Embick and Noyer 2001, among others).

2. Movement/Merge at PF
- PF operations are driven by the need to satisfy morphological features
- entails a parallel conceptual treatment of how elements are made "legible" to the two interfaces, LF and PF. Morpho-phonological features, as well as formal features, trigger dislocation and insertion (see also Ndayiragiye 2000).
- post-syntactic morphology: this analysis is compatible with the view that the locus of morphology is between Spell-out and PF, as in Distributed Morphology (Halle and Marantz 1993; Noyer 1997; Embick and Noyer 2001; and related work)
late insertion: terminals are provided with specific Vocabulary Items post-syntax

**Feature disjointness** (Embick 1997, 2000): syntacticosemantic features are not introduced in Morphology; purely phonological/morphological features absent in syntax.

- post-syntactic operations in Nuu-chah-nulth motivated by satisfaction of morphological feature [suffix]
- Merge of the "dummy" host ?t does not introduce syntacticosemantic features

3. Towards a restricted inventory of grammatical operations?

- Move/Merge applying throughout the grammar
- alternative characterisations of PF operations
  - **Move**: Morphological Merger (Marantz 1988, 1989; Bobaljik 1994), Local Dislocation (Embick and Noyer 2001), Merger (Bošković), Prosodic Inversion (Halpern 1992)
  - **Merge**: do-support as the default "pronunciation of a bare affix when it is stranded" (Lasnik 2000), "dissociated" morphemes inserted at Spell-Out (Embick 1997, Noyer and Embick 2001)

- recasting these operations as Move/Merge would allow for a restricted inventory of grammatical operations.

questions for future research:

- do the different properties of syntactic and post-syntactic operations fall out from the different interface requirements at LF and PF?
- are both syntactic and PF head movement available cross-linguistically? If so, what makes this distinction learnable?

References

Ackema, Peter and Ad Neeleman. 2003. LOT Winterschool class notes.


Storham, John. 1998. *Numerals and Incorporation in Nootka*. In *Papers for the 34th*
Stonham, John and Sze Man Yu. 2000. Woman-buy vs. two-have: two types of incorporation in Nootka. Paper presented at the LSA Annual winter meeting.

APPENDIX A
Move vs. Merge

• could lexical objects be Merged directly into the position preceding the predicate?
  No: there is evidence that the input is VO rather than OV
  Evidence for a VO order comes from cases in which the object of an affixal predicate contains more than one word.7

(i) lua2um3fi5:</i>ʔapinis
  tasty-<i>get</i>-3.IND-PL apples
They are eating tasty apples.

(ii) vəʔənʔum [ʔaʔapinis]

• the movement analysis correctly predicts stranding below the predicate

(iii) a. ʔapinis ʔənʔum ʔəʔapinis
get.3-PST-1sg IND-PL apples
I found the toy phone.

(iv) a. *ʔapinis ʔənʔum ʔəʔapinis
get.3-PST-1sg IND-PL apples
I found the toy phone.

• An affixal predicate which is attached to the expletive morpheme may take a lexical DP as its object. An affixal predicate which is attached to a non-expletive host may not take another DP as its object.

• This indicates that while a non-expletive object saturates a transitive predicate’s valency, the expletive morpheme ʔu does not.
• This asymmetrical behaviour of expletives and non-expletives can be accounted for under an analysis in which non-expletive objects are introduced into a thematic position (the complement of the verb) while ʔu is merged into a non-thematic position.

APPENDIX B
Key to abbreviations

<table>
<thead>
<tr>
<th>ABS</th>
<th>absolutive</th>
<th>CAUS</th>
<th>causative</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEIC</td>
<td>deictic</td>
<td>DET</td>
<td>determiner</td>
</tr>
<tr>
<td>DIR</td>
<td>directive</td>
<td>DUR</td>
<td>durative</td>
</tr>
<tr>
<td>FUT</td>
<td>future tense</td>
<td>IMP</td>
<td>imperative</td>
</tr>
<tr>
<td>IND</td>
<td>indicative</td>
<td>L</td>
<td>vowel lengthening</td>
</tr>
<tr>
<td>NEG</td>
<td>negative</td>
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<td>object</td>
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<td>OBJ</td>
<td>object</td>
<td>PAS</td>
<td>passive</td>
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<tr>
<td>PERF</td>
<td>perfective</td>
<td>1, 2, 3</td>
<td>[person number]</td>
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<tr>
<td>PL</td>
<td>plural</td>
<td>POSS</td>
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<td>reduplication</td>
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<td>repetitive</td>
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<td>S</td>
<td>vowel shortening</td>
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<td>singular</td>
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<td>SP</td>
<td>sporadic</td>
<td>SUB</td>
<td>subject</td>
</tr>
<tr>
<td>TEMP</td>
<td>temporal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Makah is the only Southern Wakashan language to fully retain etymological *q q, and to have fully lost the glottalized * We are very grateful, first, to our consultants Ruth Claplanhoo, Helma Swan Ward, and other Makah Elders, who have shown remarkable patience and dedication in working with us to preserve their language.