

PF Incorporation: Evidence from Wakashan*

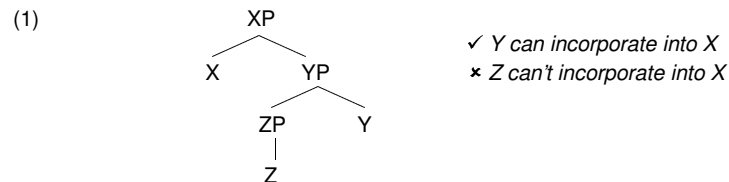
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1. The problem

- 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):



- Baker (2000):
"a structure like $A_k + V [_{NP} t_k N]$ 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)¹

(2) a. ʔuyaq̣h-iip-ʔiš Robin
 news-**obtain**-3.IND Robin
 Robin received news.

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¹ Nuu-chah-nulth (nuučaanaŋɬ) 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 Ahusaht (ʔaahuusʔaŋɬ) dialect, one of approximately 14 dialects of the language.

b. ʔuɬ-iip-ʔiš Robin ʔuyaq̣hmis
 good-**obtain**-3.IND Robin news
 Robin received good news.

- CLAIM: -head movement in Nuu-chah-nulth is sensitive to *linear* adjacency.
-it is therefore not a true syntactic operation

outline of the presentation**§ 2 Affixal predicates in Nuu-chah-nulth****§ 3 Evidence that movement occurs in Phonological Form (PF)****§ 4 Evidence for head movement****§ 5 Comparison to alternative analyses****§ 6 Implications****2. Transitive predicates in Nuu-chah-nulth**

- transitive predicates in Nuu-chah-nulth fall into two distinct classes (Stonham and Yiu 2000, Woo 2000, Woo and Wojdak 2001, Davis and Sawai 2001):

- free roots, which I will term "independent" predicates
- a set of bound roots, which I will term "affixal" predicates.²

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

(3) a. * ʔaap-mit-ʔiš čakup maht̚ii
 buy-PST-3.IND man house
 A man bought a house.

b. maht̚iiʔaamitʔiš čakup
 maht̚ii-ʔaap-mit-ʔiš čakup
 house-**buy**-PST-3.IND man
 A man bought a house.

c. ʔuʔaamitʔiš čakup maht̚ii
 ʔu-ʔaap-mit-ʔiš čakup maht̚ii
 Ø-**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 ʔu- morpheme or to an object. This is shown with *maakuk* "to buy":

(4) a. makuk^witʔiš čakup maht̚ii
 maakuk-mit-ʔiš čakup maht̚ii
 buy-PST-3.IND man house
 A man bought a house.

² Affixal predicates have traditionally been referred to as "lexical suffixes" (cf. Sapir and Swadesh 1939, Swadesh 1939, Rose 1981, Davidson 2002).

- b. * maḥtʰii-**maakuk**-mit-ʔiš čakup
house-**buy**-PST-3.IND man
A man bought a house.
- c. * ʔu-**maakuk**-mit-ʔiš čakup maḥtʰii
Ø-**buy**-PST-3.IND man house
A man bought a house.

- For both affixal and independent transitives, it is impermissible for the predicate to be suffixed to the subject.

- (5) a. * čakup-**ʔaap**-mit-ʔiš maḥtʰii
man-**buy**-PST-3.IND house
A man bought a house.
- b. * čakup-**maakuk**-mit-ʔiš maḥtʰii
man-**buy**-PST-3.IND house
A man bought a house.

(6) *Summary of the basic data*

	<i>affixal predicates</i>	<i>independent predicates</i>
occur independently?	✗	✓
suffixation to ʔu-?	✓	✗
suffixation to object?	✓	✗
suffixation to subject?	✗	✗

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. -ʔinhi "waiting for"
b. -ʔaʔuuk "looking after"
c. -iʔiʔa "resembling"

(8) *Monosyllabic affixal predicates*

- a. -ñaah "trying to locate"
b. -ćuu "being inside a container"
c. -ḥtin "being made of"

(9) *Non-syllabic affixal predicates*

- a. -q "travelling in a vessel with"
b. -kš "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

morpho-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), Bošković (2001), Ackema & Neeleman (2003).)³

claims:

- Attachment of the affixal predicate to its host is accomplished in the post-syntactic component PF. (§3)
- Head movement: movement of an X⁰, yielding an X⁰. (§4)

3. A PF analysis

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

(10) *Predictions of a PF analysis*

- (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.

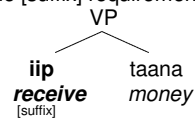
(11) a. Move: I wonder [which book] Q [John gave ___ to Mary]



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

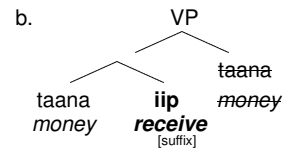
- parallel results are found with Nuu-chah-nulth affixal predicates: Nuu-chah-nulth allows either Move or Merge for satisfying [suffix]:

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



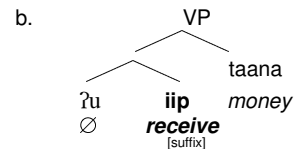
(13) The Move option

a. taana*iip*paʔk
 taana-*iip*-ʔaʔ-k
 money-receive-TEMP-2sg.Q
 Did you receive money?



(14) The Merge option

a. ʔuʔiʔaʔk taana
 ʔu-*iip*-ʔaʔ-k taana
 ∅-receive-TEMP-2sg.Q money
 Did you receive money?



- ungrammaticality occurs if neither of these options apply.

(15) * ʔip-ʔaʔ-k taana
receive-TEMP-2sg.Q money
 Did you receive money?

- ungrammaticality occurs if both of these options apply:

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

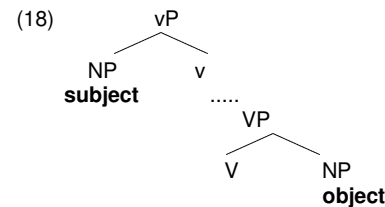
b. * taana-ʔu-*ip*-ʔaʔ-k
 money-∅-receive-TEMP-2sg.Q
 Did you receive money?

- 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.



- 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:⁴

(19) a. ʔaačʔiihamitsiš ʔaačʔiiha maʔiʔqac
 ʔaačʔiiha-mit-siš ʔaačʔiiha maʔiʔqac
 catch.glimpse.of-PST-1sg.IND girl and boy
 I caught a glimpse of a girl and a boy.

b. ʔaačačititk ʔaačʔiiha
 ʔaača-čititk ʔaačʔiiha
 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.

- c. * ʔaačaciḥtk ṅaačṗiiḥa ʔuhʔiis maʔiḥqac
 ʔača-čit-mit-k ṅaačṗiiḥa ʔuhʔiis maʔiḥqac
 who-OBJ-PST-2sg.Q catch.glimpse.of and boy
 (=Who did you catch a glimpse of and a boy?)

- the CSC is ignored in attaching an affixal predicate:

- (20) a. ʔuhaaʔasči ʔiḥickkuk ʔuhʔiis šuuk^{waa}
 ʔu-haaʔas-či ʔiḥickkuk ʔuhʔiis šuuk^{waa}
 Ø-go&buy-2sg.DIR.IMP.3OBJ flour and sugar
 Go and buy flour and sugar!
- b. ʔiḥickkukhaaʔasči ʔuhʔiis šuuk^{waa}
 ʔiḥickkuk-haaʔas-či ʔuhʔiis šuuk^{waa}
 flour-go&buy-2sg.DIR.IMP.3OBJ and sugar
 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. ʔuʔiicʔiisʔaḥ haʔum ʔaapinis
 ʔu-ʔiic-ʔiis-ʔaḥ haʔum ʔaapinis
 Ø-eat-3.IND-PL tasty apples
 They are eating delicious apples.
- b. haʔumʔiicʔiisʔaḥ ʔaapinis
 haʔum-ʔiic-ʔiis-ʔaḥ ʔaapinis
 tasty-eat-3.IND-PL apples
 They are eating delicious apples.
- c. * ʔaapinyicʔiisʔaḥ haʔum
 ʔaapinis-ʔiic-ʔiis-ʔaḥ haʔum
 apples-eat-3.IND-PL tasty
 They are eating delicious apples.

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

- (22) a. ʔuʔiisʔiis ʔaya ṁuksʔi
 ʔu-is-ʔiis ʔaya ṁuksʔi
 Ø-on.beach-3.IND many rocks
 There's lots of rocks on the beach.

- b. ʔayisʔiis ṁuksʔi
 ʔaya-is-ʔiis ṁuksʔi
 many-on.beach-3.IND rocks
 There's lots of rocks on the beach.

- c. * ṁuksʔi-is-ʔiis ʔaya
 rock-on.beach-3.IND many
 There's lots of rocks on the beach.

- in "which"-questions, the *wh*-word hosts the predicate, while the restriction is stranded (Davis and Sawai 2001):

- (23) waayaʔamith Louis č'upč'upšumḥ
 waaya-ʔaap-mit-ḥ Louis č'upč'upšumḥ
 which-buy-PST-3.INT Louis sweater
 Which sweater did Louis buy?

3.3 Prediction #3: insensitivity to syntactic category

- (24) Potential hosts for the affixal predicate:

- noun
- adjective (21)
- quantifier (22)
- wh*-word (23; 25)
- relative pronoun (26)
- verb (27)

- (25) ʔaqiʔamith Louis
 ʔaqi-ʔaap-mit-ḥ Louis
 what-buy-PST-3.INT Louis
 What did Louis buy?

- (26) ḥačumsiqsaksiš ḥaa čakupʔi yaʔinḥiʔitq Mary
 ḥačumsiqs-ak-siš ḥaa čakup-ʔi yaq-ʔinḥi-ʔitq Mary
 brother-POSS-1sg.IND DEIC man-DET REL-wait.for-3.REL Mary
 The man who Mary is waiting for is my brother.

- (27) a. ʔuʔuutuḥitsiš qaḥšixitsuuk
 ʔu-atut-mit-siš qaḥ-šix-mit-suuk
 Ø-dream[+R]-PST-1sg.IND die-PERF-PST-2sg.ABS
 I dreamt you died.

- b. qaqaḥʔatuḥitsiš suwa
 qaḥ-atut-mit-siš suwa
 die-dream[+R]-PST-1sg.IND you(sg)
 I dreamt you died.

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:
 - quantifier scope
 - 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) η uutaqit η is *hišuk* čaakupiḥ muunaa
 η u-taq-mit- η is *hiš-uk* čakup-iḥ muunaa
 Ø-fix[+L]-PST-3.IND all-DUR man-PL[+L] motor
 All the men were working on an engine. (both $\forall\exists$ & $\exists\forall$)

(29) muunaataqit η is *hišuk* čaakupiḥ
 muunaa-taq-mit- η is *hišuk* čakup-iḥ
 motor-fix[+L]-PST-3.IND all-DUR man-PL[+L]
 All the men were working on an engine. (both $\forall\exists$ & $\exists\forall$)

3.4.2 Focus

- there does not appear to be any interaction between focus and the surface position of the object.⁵
- the noun *hišuk* "flour" can be also focused when it hosts an affixal predicate or when it occurs as an independent word.

(30) Q: η uu η išash *šuu*^{waa}
 η u-hišas-ḥ *šuu*^{waa}
 Ø-go.get[+L]-3.Q sugar
 Did he go get sugar?

(31) A: either of:

a. wik η uu η išas η is *hišuk*
 wik η u-hišas- η is *hišuk*
 NEG Ø-go.get[+L]-3.IND flour
 No, he went to get flour.

b. wik *hišuk*-hišas- η is
 wik *hišuk*-hišas- η is
 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. η u η usum η is Louis taana
 η u-sum- η is Louis taana
 Ø-want[+R +S]-3.IND Louis money
 Louis wants money.

b. tatanaqsum η is Louis
 taana-sum- η is Louis
 money-want[+R +S]-3.IND Louis
 Louis wants money.

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

(33) a. η uuḥwa η i yax η ak
 η u-hwa- η i yax η ak
 Ø-use[+L]-2sg.IMP.3OBJ broom
 Use the broom!

b. yaax η akhwa η i
 yax η ak-hwa- η i
 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).

⁵ 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. *ʔu-yuʔaaʔ* "to find"
- b. Long initial vowel eg. *ʔuu-ɥwaʔ* "to use"
- c. Reduplication with neutral vowel length eg. *ʔuʔu-q* "to travel with"
- d. Redup. with short initial vowel & long second vowel eg. *ʔuʔuu-sapi* "to depend on"
- e. Redup. with short initial vowel & short second vowel eg. *ʔuʔu-sum* "to want"
- f. Redup. with neutral initial vowel & long second vowel eg. *ʔuʔuu-yuk* "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 & Stjepanović 2001, etc.)
- phrases? (cf. Chomsky 1999)
- phonological constituents (σ , Φ)?

4. Head movement

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

- (36)
- a. *ʔuucaaqʔiʃ* *ʔaaɥuusʔaθ* *kʷaqmis*
ʔu-caaqʔiʃ *ʔaaɥuusʔaθ* *kʷaq-mis*
 \emptyset -**busy.with**[+L]-3.IND *place.name*-from s.h.eggs-thing
 The Ahousahts are busy with spawned herring eggs.
 - b. *kʷaaqcaaqʔiʃ* *ʔaaɥuusʔaθ*
kʷaq-caaqʔiʃ *ʔaaɥuusʔaθ*
 s.h.eggs-**busy.with**[+L]-3.IND *place.name*-from
 The Ahousahts are busy with spawned herring eggs.
 - c. * *ʔu-caaqʔiʃ* *ʔaaɥuusʔaθ* *kʷaq*
 \emptyset -**busy.with**[+L]-3.IND *place.name*-from s.h.eggs
 The Ahousahts are busy with spawned herring eggs.

- d. * *kʷaq-mis-caaqʔiʃ* *ʔaaɥuusʔaθ*
 s.h.eggs-thing-**busy.with**[+L]-3.IND *place.name*-from
 The Ahousahts are busy with spawned herring eggs.

- (37) a. *ʔuɥaɥuʔʔiʃ* *ʃimtʔiʔakʔi* *ɥaa* *ʔuucmaʔi*
ʔu-ɥaɥuʔʔiʃ *ʃimtʔiʔakʔi* *ɥaa* *ʔuucmaʔi*
 \emptyset -**on.front**-3.IND name-POSS-DET DEIC woman-DET
 That woman's got her name written on her front.

- b. *ʃimtʔiɥaɥuʔʔiʃ* *ɥaa* *ʔuucmaʔi*
ʃimtʔi-ɥaɥuʔʔiʃ *ɥaa* *ʔuucmaʔi*
 name-**on.front**-3.IND DEIC woman-DET
 That woman's got a/her name written on her front.

- c. * *ʃimtʔiʔak-ɥaɥuʔʔiʃ* *ɥaa* *ʔuucmaʔi*
 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^0 .

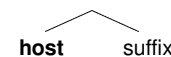
(38) *Predictions of a head movement analysis*

- (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 (σ , Φ)

4.1 Recursion

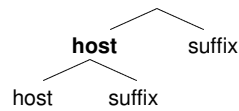
- a diagnostic for head movement is its recursive properties
- if movement of a head yields a head, then this movement is predicted to be recursive.
- in Nuu-chah-nulth, [host + affixal predicate] complexes are themselves available as hosts for other affixal predicates.

simplex host:



- (39) a. maa *ʔuʔuqʃiʔin* *ʔiʃʔiip* *wikaaʔin* *wimasʔuqʷa*
 maa *ʔu-ʔuq-ʃiʔ-ʔin* *ʔiʃʔiip* *wik-ʔaaʔin* *wimas-ʔuq-ya*
 here \emptyset -**put.in.mouth**-PERF-1pl gum NEG-purpose sour-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 *ʔiʃʔiipʔuʔuqʃiʔin* *wikaaʔin* *wimasʔuqʷa*
 maa *ʔiʃʔiip-ʔuq-ʃiʔ-ʔin* *wik-ʔaaʔin* *wimas-ʔuq-ya*
 here gum-**put.in.mouth**-PERF-1pl NEG-purpose sour-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:



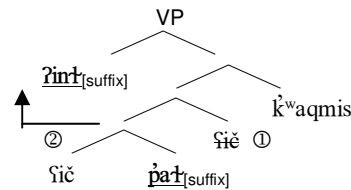
(40) a. ?u?paʔcuqʃiʔin čamas
 ?u-paʔ-cuq-ʃiʔ-ʔin čamas
 Ø-taste-put.in.mouth-PERF-1pl.IMP sweets
 Let us put something sweet in our mouth.

b. čamaspaʔcuqʃiʔin
 čamas-paʔ-cuq-ʃiʔ-ʔin
 sweet-taste-put.in.mouth-PERF-1pl.IMP
 Let us put something sweet in our mouth.

sample derivations

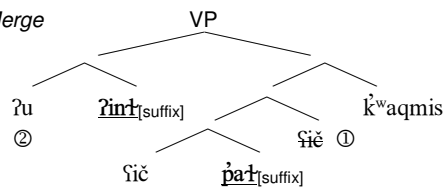
(41) ʃiʔpaʔʔinʔanitniʃ kʷaqmis Mary
 ʃiʔ-paʔ-ʔinʔ-ʔat-mit-niʃ kʷaq-mis Mary
 rotten-taste-serve-PAS-PST-1pl.IND s.h.eggs-thing Mary
 We were served rotten-tasting spawned herring eggs by Mary.

(42) Move + Move



(43) ?uʔinʔʔanitniʃ Mary ʃiʔpaʔ kʷaqmis
 ?u-ʔinʔ-ʔat-mit-niʃ Mary ʃiʔ-paʔ kʷaqmis
 Ø-serve-PAS-PST-1pl.IND Mary rotten-taste s.h.eggs
 We were served rotten-tasting spawned herring eggs by Mary.

(44) Move + Merge



4.2 Contrast with phrasal movement

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

(45) a. * ?iih mʷuksʔi-ʔiʔ-it-ʔiʃ Louis
 big-rock-take-PST-3.IND Louis
 Louis took a big rock.
 b. * ?iih kʷatyik-ʔiʔ-it-ʔiʃ Louis mʷuksʔi
 big-heavy-take-PST-3.IND Louis rock
 Louis took a big, heavy rock.

- This provides evidence that head movement, rather than phrasal movement, is used to satisfy the [suffix] feature of an affixal predicate.

4.3 Mismatch with phonologically-defined constituents (σ , Φ)

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

(46) a. ?uʔiʔʔiʃ mamaʔni
 ?u-iʔ-ʔiʃ mamaʔni
 Ø-inside-3.IND white.person
 There's white people inside.
 b. quuʔacitʔiʃ
 quuʔac-iʔ-ʔiʃ
 person-inside-3.IND
 There's a person inside.
 c. mamaʔniqitʔiʃ
 mamaʔni-iʔ-ʔiʃ
 white.person-inside-3.IND
 There's white people inside.

Summary of the analysis

- 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

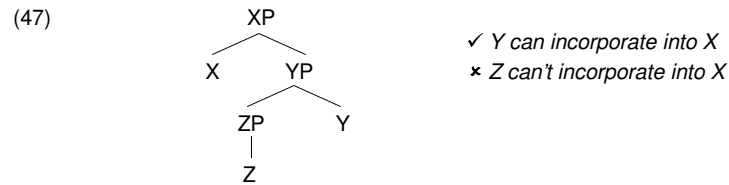
- I will argue against two alternative accounts of the Nuu-chah-nulth data:

- (i) syntactic head movement (§5.1)
- (ii) PF filter: a "weak" phonology analysis of cliticization (§5.2)

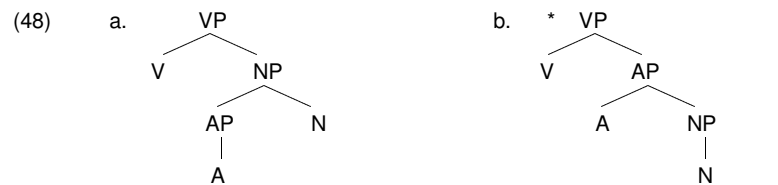
5.1 Syntactic head movement

- 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



- 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):



- 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

Therefore, if we have AP + AP + NP:

- possible: AP + NP[AP + NP]
- impossible: AP + AP[AP + NP].

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

(50) ʔiihʔiʔitʔiʂ John k^watyik m^uksʔi
 ʔiih-ʔiʔ-mit-ʔiʂ John k^watyik m^uksʔi
 big-**take**-PST-3sg.IND John heavy stone
 John took a big, heavy stone.

- 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

	linear selection of host	CSC violations	absence of LF effects
<i>syntactic head movement</i>	✗	✗	✗
<i>PF head movement</i>	✓	✓	✓

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 can 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:

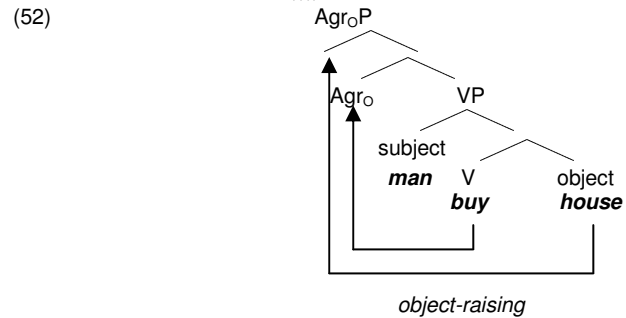
- (i) Object-raising (§5.2.1)
- (ii) No movement (§5.2.2)

5.2.1 The syntactic object-raising option

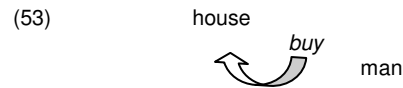
- When the affixal predicate is attached to an element from its object, OVS morpheme order is obtained.

(51) mahtiiʔamitʔiʂ čakup
 $\text{mahtii-ʔaap-mit-ʔiʂ}$ čakup
 house-**buy**-past-3.IND man
 A man bought a house.

- sketch of XP object-raising⁶



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



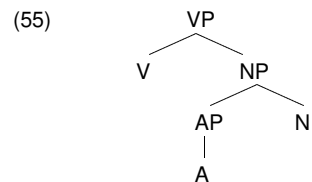
problems with this account:

- (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)

5.2.2 The no-movement option

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

(54) λuʔuʔaaʔs taakinis
 λuʔ-uʔaaʔ-s taakinis
 good-find-1sg.ABS socks
 I found some nice socks.



⁶ This sketch ignores the presence of subject inflection and tense morphemes. In Nuu-chah-nulth, these morphemes are second-position clitics.

- Under Bošković's (2001) analysis, a V lexically specified as a suffix could then encliticize in PF to an adjacent element in the object.



- Such an account would make several correct predictions:

	linear selection of host	CSC violations	absence of LF effects
PF filter on VP	✓	✓	✓

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 *ʔu-* is introduced.

6. Conclusions

- morpho-phonological requirements met in PF
- Move applying in PF, sensitive to linear adjacency
- Merge applying in PF, introducing expletive host
- PF operates on X⁰s

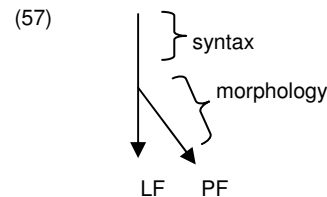
6.1 Implications

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 *ʔi*- 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?

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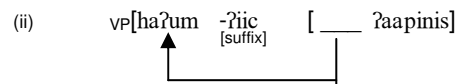
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APPENDIX A
Move vs. Merge

- 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) haʔumʔicʔisʔaʔ ʔaapinis
 haʔum-ʔic-ʔis-ʔaʔ ʔaapinis
 tasty-eat-3.IND-PL apples
 They are eating tasty apples.

- the movement analysis correctly predicts stranding below the predicate



- could the expletive morpheme ʔu- be Moved in a manner parallel to the attachment of a non-expletive host? No:

- (i) ʔu- never surfaces in complement position of an affixal predicate.
- (ii) ʔu- and non-expletive objects display asymmetrical behaviour with respect to theta role assignment: the expletive ʔu- fails to saturate an affixal transitive predicate's valency.

- An utterance is illicit if a non-expletive object is not available to the affixal predicate:

- (iii) a. ʔuʔuuʔwaʔis ɛʔapac Louis
 ʔu-ʔuuʔ-waʔis ɛʔapac Louis
 ʔ-get.paid-3.QUOT canoe Louis got paid a canoe.
- b. ɛʔapacʔuuʔwaʔis Louis
 ɛʔapac-ʔuuʔ-waʔis Louis
 canoe-get.paid-3.QUOT Louis got paid a canoe.
- c. * ʔu-ʔuuʔ-waʔis Louis
 ʔ-get.paid-3.QUOT Louis
 Louis got paid.
- 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.
- (iv) a. * kaakaniyuʔaaʔitsis kithʔaktʔiʔitaʔi
 kaakani-yuʔaaʔ-mit-sis kith-ʔak-tʔiʔita-ʔi
 toy-find-PST-1sg.IND ring-instrument-pretend-DET
 I found the toy phone.
- b. ʔuyuʔaaʔitsis kithʔaktʔiʔitaʔi
 ʔu-yuʔaaʔ-mit-sis kith-ʔak-tʔiʔita-ʔi
 ʔ-find-PST-1sg.IND ring-instrument-pretend-DET
 I found the toy phone.

- 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

ABS	absolutive		
CAUS	causative	PL	plural
DEIC	deictic	POSS	possessive
DET	determiner	PST	past tense
DIR	directive	Q	interrogative
DUR	durative	QUOT	quotative
FUT	future tense	R	reduplication
IMP	imperative	REP	repetitive
IND	indicative	S	vowel shortening
L	vowel lengthening	SG	singular
NEG	negative	SP	sporadic
OBJ	object	SUB	subject
PAS	passive	TEMP	temporal
PERF	perfective	1, 2, 3	[person number]

⁷ Davis and Sawai (2001) argue for underlying SVO word order based on the fact that this word order is obligatory in non-finite complements, such as complements to perception verbs or negation.

PF incorporation: Evidence from Wakashan. Paper read at the 26th GLOW Colloquium, Lund, Sweden. Wojdak, Rachel. 2003b. Predicative lexical suffixes in Nuu-chah-nulth. In University of British Columbia Working Papers in Linguistics 11 : Papers for ICSNL XXXVIII, the 38th International Conference on Salish and Neighbouring Languages, ed. Brown, J.C. and Kalmar, Michele, 275â€“289. Wojdak, Rachel. 2005. The Linearization of Affixes: Evidence from Nuu-chah-nulth. Doctoral dissertation, University of British Columbia. Recommend this journal. Email your librarian or administrator to recommend adding t PF Incorporation. Chapter. Jan 2008. The Linearization Of Affixes: Evidence From Nuu-Chah-Nulth. Rachel Wojdak. View.Â For example, 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.