A big point of language variation: overt movement or not?

(1)  
  a.  **What** did Taro eat?  
  b.  Taro-**wa** nani-**o** tabemasita ka?  
      [Japanese]  
      Taro-TOP what-ACC ate Q
  
  c.  A **man** has arrived.  
  d.  È arrivato **un uomo**.  
      [Italian]  
      is arrived a man
  
  e.  Jean **voit** souvent Marie.  
  f.  John **often sees** Mary.

goal of this class: to develop something to say about these alternations.

**Contiguity Theory**: certain aspects of phonological representations are first built in the ‘narrow syntax’—and there are universal conditions on how these representations are to be built, which can trigger movement operations. The parameters responsible for cross-linguistic variation in this domain are phonological parameters.

Two core requirements: **Affix Support** and **Contiguity**.  
Today we’re talking about Affix Support.

A standard assumption in Minimalism is that syntax is *phonology-free*. Two pieces of Japanese phonology that syntax is free of, on this view:

\[ t \rightarrow ch / \_i \]

(2)  
  a.  nom-anai  
      drink-NEG.NONPAST  
      ‘won’t drink’
  b.  nom-imasu  
      drink-FORMAL.NONPAST  
      ‘will drink’
  
  c.  tat-anai  
      stand-NEG.NONPAST  
      ‘won’t stand’
  d.  tach-imasu  
      stand-FORMAL.NONPAST  
      ‘will stand’
**Initial Lowering:** L% at the left edges of maximal projections (Selkirk and Tateishi 1988…)

(3) a. \[ Oomiya-no Inayama-no] yuujin
    Oomiya Gen Inayama Gen friend
    ‘the friend of [Mr. Inayama from Oomiya]’

\[ L \]

b. Oomiya-no [Inayama-no yuujin]
    Oomiya Gen Inayama Gen friend
    ‘the [friend of Mr. Inayama] from Oomiya’

\[ L \]
\[ L \]

These types of phonology are not the same…

- for the palatalization rule, you can only apply it once you know which lexical items have been inserted.
- for Initial Lowering, on the other hand, one could apply it, in principle, as soon as there are maximal projections.

**Contiguity Theory:** phonology takes place as soon as possible (and lexical insertion is late).

→ syntactic operations can take place in order to improve phonological representations.
classic observation: some languages are allowed to be verb-initial, and others aren't:

(4)   a. **There** arrived a man. [English]
      b. **Il** est arrive un homme. [French]
      c. É arrivato un uomo. [Italian]
      d. Apareció un hombre. [Spanish]
      e. Va venir un home. [Catalan]

• EPP vs. no EPP?
• overt expletives vs. null expletives? (Rizzi 1982)
• verb incapable/capable of checking EPP? (Alexiadou and Anagnostopoulou 1998)

→ today's claim: a version of the last proposal is the right one.

1. **Tense and Stress**

   In Catalan, Italian, and Spanish, the vowel before the Tense morpheme receives stress.

(5)   a. cantá -**ba** -is [Spanish]
    sing **ImpInd** 2pl
    'You (pl) sang (imperfect indicative)'

    b. cantá -**ra** -is
    sing **ImpSubj** 2pl
    'You (pl) sang (imperfect subjunctive)'

    c. cantá -**steis**
    sing **Perfect.2pl**
    'You (pl) have sung'

    d. cantá -is
    sing **Present.2pl**
    'You (pl) sing'

    e. canta -re -Ø -is
    sing **FUT Pres** 2pl
    'You (pl) will sing'

    f. canta -rí -**a** -is
    sing **FUT Past** 2pl
    'You (pl) would sing (conditional)'

proposal of the above papers:
In Catalan, Italian, and Spanish, T is preceded by a foot boundary.

formally (cf. Idsardi (1992)):
Line 0: put a Right bracket to the Left of T
project the Rightmost * in each foot to line 1

Line 1: put a Right bracket at the end of the word
project the Rightmost * of each foot to Line 2

Line 2       *       *
Line 1       * (*)       * (*)
Line 0       * (*)       * (*)       * (*)

\begin{tabular}{llll}
  can & ta & ba & is \\
  can & ta & ri & a & is \\
\end{tabular}

\begin{tabular}{llll}
  \textit{sing} & - & \textit{TENSE - AGR} & \textit{sing} & - & \textit{FUT' - TENSE - AGR} \\
\end{tabular}

(6)  
\begin{enumerate}[a.]
  \item chantéz \hspace{1cm} [\textit{French}]
  \quad 'You (pl) sang (imperfect indicative)'
  \item chantessiéz
  \quad 'You (pl) sang (imperfect subjunctive)'
  \item chantâtés
  \quad 'You (pl) have sung'
  \item chantéz
  \quad 'You (pl) sing'
  \item chanteréz
  \quad 'You (pl) will sing'
  \item chanteriéz
  \quad 'You (pl) would sing (conditional)'
\end{enumerate}

contrast (5) with (6):
\textbf{In French, stress is reliably final} (apart from cases like (6c), where final schwa avoids stress)

when's the earliest the derivation could possibly start computing stress?
\begin{itemize}
  \item in French, you can't insert any metrical structure until a word has been completed.
  \item in Italian/Spanish/Catalan, you can insert a metrical boundary to the left of T, as soon as T is introduced into the structure.
\end{itemize}
Another difference between French and Italian/Spanish/Catalan:

(7)  
a. **There** arrived a man.  
    [English]  
b. **Il** est arrive un homme.  
    [French]  
c. É arrivato un uomo.  
    [Italian]  
d. Apareció un hombre.  
    [Spanish]  
e. Va venir un home.  
    [Catalan]

proposal:

**T-support (version 1 of 2):**
If T is a suffix, it must follow metrical structure.

...where 'things with metrical structure' include:

- metrical boundaries projected by T itself (Italian, Spanish, Catalan)
- phrases (English, French)

(8)  
a. TP  
    [Spanish]  
    T
    FOOT]-PAST  
    v  
    vP  
    vP
    V
    apareció
    'arrived'
    -PAST
    un hombre
    'a man'

b. TP  
    [English]  
    XP
    [there]  
    T
    -PAST  
    v  
    vP  
    vP
    v
    arrive
    a man

what's special about phrases:
They consist of complete words
(hence, bear stress, even in languages like English and French)

V, by contrast, is just part of a word → no metrical structure yet in English, French

a useful assumption:
Derivation of stress begins happening in the syntax:
  - in Spanish, as soon as you insert T, you can insert a metrical boundary before it
  - in English and French, as soon as you complete a word, you can associate it with metrical structure.

we'll see instances of opacity later:
  - some Spanish verbs are irregular, don't have the metrical boundary before T
  - some complete words are 'irregular', don't have metrical boundaries (e.g., clitics)
    → neither of these has syntactic consequences.
I'll assume that these lexical irregularities are introduced into the structure \emph{postsyntactically} (cf. Late Insertion).

All the languages discussed so far are tense-suffixed. Extend the notion of T-support:

\textbf{T-support (version 2 of 2):} If T is an affix, there must be metrical structure in the direction in which it attaches.

"T", for our purposes, will have to be limited to particular affixes, and sometimes this will involve some analysis, as we’ll see.

\section*{2. A Typology}

"T-support" suggests a typology, involving the following parameters:
- T can be syntactically head-initial or head-final
- T can be a prefix, a suffix, free-standing...
- T can project its own metrical boundary (Spanish) or not (English)

\subsection*{2.1. Head-Initial T}

\subsection*{2.1.1. Head-Initial T: Prefix, or free-standing}

If T is free-standing, then T-support won't apply to it; we shouldn't get EPP effects. Free-standing head-initial T may be difficult to distinguish from prefixal head-initial T. Fortunately, for us, prefixal head-initial T also shouldn't trigger EPP effects. T-support would require such T to be followed by a phrase, which it always is:

\begin{itemize}
\item (9) \[ TP \]
\item (10) \[ Na'e \text{ kai 'e Sione 'a e mango } \] \[ PAST \] eat \[ ERG \text{ Sione } \] \[ ABS \text{ DEF mango } \]
\item (11) \[ Tyi \text{ i-kuch-}u \text{ aj-Maria jiñi si' } \] \[ PRFV \] 3.\text{ERG-carry-TRANS } \[ DET-Maria \text{ DET wood } \]
\item (12) \[ Wá7=\text{k'a ka-mays-túm-a ts7a ku=\text{káoh e}=\text{ti=n-snúk'w7}=\text{a} } \] \[ IMPF=\text{EPIST CIRC-fix-PASS-CIRC this DEF=car by=DEF=1SG.POSS\text{-friend=EXIS} } \]
\end{itemize}

\begin{itemize}
\item 'Sione ate the mango'
\item 'Maria carried the wood'
\item 'My friend could probably fix this car'
\end{itemize}
In none of these languages do we expect stress to be sensitive to morpheme boundaries:
• Irish stress is generally initial (Bammesberger 1983, 11)
• St'át'imcets stress is trochaic, from left to right (Roberts and Shaw 1994, Caldecott 2007)

2.1.2. Head-Initial T: Suffix

If head-initial T is a suffix, then its metrical requirements cannot be satisfied by the vP complement of T; these are the languages that can in principle show EPP effects, though we have already seen that not all of them do.

2.1.2.1. Head-Initial T: Suffix, projects own metrical boundary

note that there are some irregular verbs...

(19) a. *temí-Ø*
    fear-PERFECT.1SG
    'I feared'

b. *temí-ste*
    fear-PERFECT.2SG
    'you feared'

(20) a. *púse-Ø* [Spanish]
    put-PERFECT.1SG
    'I put'

b. *pusí-ste*
    put-PERFECT.2SG
    'you put'

...which are typically irregular in several ways (the infinitive for (20) is *poner*).

→ syntax must not know about irregular verbs; these are introduced postsyntactically.

picture of lexical insertion; the narrow syntax operates on a representation that has information
that's linked just to syntactic properties (e.g., "T in this language is a suffix"), but not lexically
idiosyncratic information ("this particular verb is irregular").

2.1.2.2. Head-Initial T: Suffix, projects no metrical boundary

(21)  
    [XP]

    -T

    vP

    T'

These will be the languages with EPP effects: T doesn't project its own foot boundary, so will
need to be preceded by something that does.

(22) **There** arrived a man.  [English]

(23) **Il** est arrive un homme.  [French]

(24) **Sitä** leikkii lapsia kadulla.  [Finnish: Holmberg and Nikanne 2002]
    EXPL play children in.street
    'Children play in the street'

Note that *pro* seems to be capable of satisfying EPP in Finnish:

(25) **Puhu-n englantia**
    speak-1SG English
    'I speak English'  [Holmberg 2005, 539]

→ pro-drop is post-syntactic (and also: this is not a theory of pro-drop)
2.2 Head-Final T

- Kayne (1994) is right; T always begins the derivation head-initial, and later becomes head-final.

2.2.1. Head-Final T: Suffix

\[(26) \quad \text{TP} \quad \rightarrow \quad \text{TP} \quad ("\text{Rotation"})\]

Miyagawa (2001) has argued that Japanese does indeed have EPP effects:

\[(27) \quad \text{Zen'in-ga sono tesuto-o ukenakatta} \]
\[\text{all-NOM that test-ACC took-NEG} \]
\[\text{'All didn't take that test'} \quad \forall > \neg, \neg > \forall \]

\[(28) \quad \text{Sono tesuto-o zen'in-ga __ ukenakatta} \]
\[\text{that test-ACC all-NOM took-NEG} \]
\[\text{'That test, all didn't take'} \quad \forall > \neg, \neg > \forall \]

On Miyagawa's account, a structural position higher than negation must be occupied; in (27), it is occupied by the subject, while in (28), it may be occupied by either the subject or the scrambled object.

This EPP effect arises from the first step in (26). But what about the second step? why doesn't that satisfy the EPP? We'll come back to that eventually.

2.2.2. Head-Final T: Prefix

2.2.2.1. Head-Final T: Prefix, projects own metrical boundary

\[(29) \quad \text{TP} \quad \rightarrow \quad \text{TP} \quad \text{[\text{FOOT}]} \]

A language of this type will not show EPP effects, since T satisfies its own T-support requirement.

"Despite the difficulty in hearing stress in some of the [Athabaskan] languages, certain facts about stress have become evident over the years. First and foremost is the attraction of stress to the stem." [Hargus and Rice 2005, 34]

\[(30) \quad \text{s- a- s- Gúh} \quad \text{[Witsuwit'en: Hargus 2005, 400]} \]
\[\text{CNJ PERF 1SGS catch} \]
\[\text{'I caught it'} \]
2.2.2.2. Head-Final T: Prefix, projects no metrical boundary

Unattested?

(31) \[ \begin{array}{c}
T^- & vP \\
\rightarrow & \\end{array} \]

After T becomes head-final, T-support should fail.

Dryer (1992):

Tense suffixes are cross-linguistically more common than Tense prefixes, and in V-final languages, Tense prefixes are very rare (only 10% of Dryer's sample of OV languages have Tense prefixes; 30% of his VO languages do).

If the account sketched here is right, in an OV Tense-prefixing language, Tense would have to project its own metrical boundary. Maybe that's why Tense-prefixing is less common in OV than in VO.

3. Some conclusions/questions

Proposed universal: if T is an affix, then there must be something with metrical structure in the direction to which T attaches.

Parameters:

- T is head-initial/final
- T is a prefix/suffix/
- T projects (or doesn't) its own metrical boundary

What does syntax know?

Syntax doesn't seem to know anything that's specific to particular lexical items: irregular verbs in Spanish, pro-drop in Finnish, etc.

Moreover, it seems not to be able to 'look ahead' to the rest of the syntactic derivation:

(32) Did there arrive a man?

*there* inserted to satisfy T's need for metrical structure...

...and then T moves further, subsequently.

Although we're allowing syntax to make reference to properties of phonological representation (metrical boundaries, prefix/suffix distinction), we apparently want those properties to be present in the syntactic representation.
What's so special about T?

Nothing. Suppose we generalize the principle further:

**Affix Support**

If any head is an affix, there must be metrical structure in the direction in which it attaches.

All that's special about T, on this account, is that it tends to be the highest head that combines with the verb, so that we notice in some languages that that verb has to be preceded by something (EPP).

Is this idea going to mess us up in EPP-less languages, like Irish? Irish verbs do have suffixes:


(33) a. déan -aimid [Irish]
    do 1PL.NONPAST
    'we do'  (present)

b. déan -f -aimid
    do IRR 1PL.NONPAST
    'we will do'  (future)

c. (do) dhéin -amar
    PAST PAST-do 1PL.PAST
    'we did'  (past)

d. (do) dhéan -aimis
    PAST PAST-do 1PL.??
    'we did, habitually'  (habitual past)

e. (do) dhéan -f -aimis
    PAST PAST-do IRR 1PL.??
    'we would do'  (conditional)

But as long as these suffixes are lower than the Tense morphology, and as long as the verb raises to Tense, Irish will still be VSO:

(34) TP
    T
    PAST-
    DP
    SUBJECT
    X'
    X
    -IRR
    vP
    v
    VP
    VERB
The suffixal head of XP induces an EPP effect after the verb.

Might help explain Irish post-verbal expletives:

(35) a. Tá sé fíor [ go raibh Ciarán i láthair] [Irish: McCloskey 1984, 452-453]
   is it true that was Ciaran present
   'It is true that Ciarán was present'

b. Th-ioc-f-adh leis a bheith ag cur
   PAST-come-IRR-AGR to.it to.be raining
   'It could be raining'

…and we could imagine this idea being useful for V2, object shift, etc…

…and for the need to insert expletives at the vP edge, at least in some languages (Deal 2009)?

Let's now try to test the theory more broadly.

4. Using WALS

http://wals.info/

- online information about 2,678 languages
- each language described in terms of up to 192 properties
- …with some inevitable judgment calls, as we'll see.
- allows you to find out how often particular values of properties cooccur (WALS accessed 2/4/13):

<table>
<thead>
<tr>
<th>Tense-aspect prefixes (153)</th>
<th>SOV (565)</th>
<th>SVO (488)</th>
<th>VSO (95)</th>
<th>VOS (25)</th>
<th>OVS (11)</th>
<th>OSV (4)</th>
<th>No dominant order (189)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19</td>
<td>78</td>
<td>20</td>
<td>6</td>
<td>1</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Tense-aspect suffixes (668)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>362</td>
<td>94</td>
<td>12</td>
<td>6</td>
<td>3</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Tense-aspect tone (13)</td>
<td>2</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Mixed type (146)</td>
<td>34</td>
<td>50</td>
<td>21</td>
<td>4</td>
<td>1</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>No tense-aspect inflection (152)</td>
<td>27</td>
<td>87</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

"Tense/aspect" is not really what we're after; what we'd really like to know is the status of the highest affix (if we're generalizing "T-support" to "Affix support"). But this is what WALS can do for us, and it's a start.
In what follows I'll concentrate on V-peripheral languages (that is, SOV and V-initial). I'm doing that because these are the languages in which it's easiest to get the theory to fail. Two unexpected kinds of languages (and cf. Hawkins and Cutler 1988):

(36)  
a. S O \text{ PREFIX-V} 

b. V-SUFFIX S O 

In both of the examples in (36), the verb bears morphology that seems to require Support in a direction where there isn't any. So when we see examples like these, we need to consider them carefully.

By contrast:

(37) S V O 

Even if we don't see morphology on the verb that would require S to raise to a higher specifier, it's easy enough to posit null suffixes, if we decide we need them.

So we'll look at the verb-peripheral languages.
4.1. SOV languages

362 of these behave the way the theory says they should (Tense-suffixing), and 19 don't (Tense-prefixing). Here's a list of the problematic 19:

**SOV languages with Tense prefixes (19)**

<table>
<thead>
<tr>
<th>Language</th>
<th>Language</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apache (Western)</td>
<td>Athabaskan</td>
<td></td>
</tr>
<tr>
<td>Chipewyan</td>
<td>Athabaskan</td>
<td></td>
</tr>
<tr>
<td>Navajo</td>
<td>Athabaskan</td>
<td></td>
</tr>
<tr>
<td>Slave</td>
<td>Athabaskan</td>
<td></td>
</tr>
<tr>
<td>Ala’ala</td>
<td>Austronesian</td>
<td>(Oceanic: Papua New Guinea)</td>
</tr>
<tr>
<td>Gumawana</td>
<td>Austronesian</td>
<td>(Oceanic: Papua New Guinea)</td>
</tr>
<tr>
<td>Iduna</td>
<td>Austronesian</td>
<td>(Oceanic: Papua New Guinea)</td>
</tr>
<tr>
<td>Maisin</td>
<td>Austronesian</td>
<td>(Oceanic: Papua New Guinea)</td>
</tr>
<tr>
<td>Sinaugoro</td>
<td>Austronesian</td>
<td>(Oceanic: Papua New Guinea)</td>
</tr>
<tr>
<td>Tawala</td>
<td>Austronesian</td>
<td>(Oceanic: Papua New Guinea)</td>
</tr>
<tr>
<td>Maklew</td>
<td>Bulaka River</td>
<td>(New Guinea)</td>
</tr>
<tr>
<td>Seri</td>
<td>Hokan (Seri)</td>
<td></td>
</tr>
<tr>
<td>Kiliwa</td>
<td>Hokan (Yuman)</td>
<td></td>
</tr>
<tr>
<td>Marind</td>
<td>Marind</td>
<td>(New Guinea)</td>
</tr>
<tr>
<td>Yaqay</td>
<td>Marind</td>
<td>(New Guinea)</td>
</tr>
<tr>
<td>Zinakani</td>
<td>Marind</td>
<td>(Papua New Guinea)</td>
</tr>
<tr>
<td>Iwam</td>
<td>Upper Sepik</td>
<td>(Papua New Guinea)</td>
</tr>
<tr>
<td>Yelî Dnye</td>
<td>Yele</td>
<td>(Papua New Guinea)</td>
</tr>
<tr>
<td>Ket</td>
<td>Yeniseian</td>
<td></td>
</tr>
</tbody>
</table>

4 of these are Athabaskan; see section 2.2.2.1 above.

(12 of them are from New Guinea)

2 of them are arguably like Athabaskan in having verb roots that are metrical units:
- Ket (Vajda 2008)
- Seri (Marlett 2008; stress on penultimate syllable of root)
Seri (Hokan): Marlett (2008: 2, 13)

(38) a. t-ásá 'it stinks'
    REAL- stink
b. po-m-ása 'it will not stink'
    IRREAL-NEG- stink
c. i- t- áxp 'S/he is angry with h/
    3S3O- REAL- be.angry.with
d. i- t- áxp -at 'They're angry with h/
    3S3O- REAL- be.angry.with-PL.SUBJ

e. i- t- áxp -olca 'They're being angry with h/
    3S3O- REAL- be.angry.with-PL.SUBJ/IMPERF
f. i- t- atólec 'S/he asks h/ for help'
    3S3O- REAL- ask.for.help
g. i- t- atólec -oj 'They ask h/ for help'
    3S3O- REAL- ask.for.help-PL.SUBJ
h. i- t- atólec -am 'They're asking h/ for help'
    3S3O- REAL- ask.for.help-PL.SUBJ/IMPERF

So in Seri (unlike English or French), as soon as you have a root, you can give it prosodic structure, assigning a trochaic foot to its right edge. Any affixes you add after that are being added to something with prosodic structure, so Affix Support is satisfied.

Meanwhile, in New Guinea…

Sinaugoro (Tauberschmidt 1999, 10-11; stress on initial syllable (and penultimate, if that doesn’t cause clash))

(39) a. ['ya.li.'va.ta] 'banana'
    b. ['tu.ya.'ma'ji] 'thought'
    c. ['vo.vo.ka] 'plenty'
    d. ['nu.ma] 'house'

tense/agreement/etc. morphology precedes the verb, and is stressed as a separate word:

(40) a. ['ba.-γa. 'ma-ri.γo] REMOTE-1PL.EXCL at.speaker-come.down
    'We came down'
    
    b. ['bo.-γo.-no.-a. 'fou] REMOTE-2PL-IMPER-different.location wash
    'Wash yourselves (over there)'
exception: if the preverbal complex is just one syllable long, it's treated as part of the verb for stress:

(41) [‘γα.‐ma‐ri.‘γo‐ni]
    1PL.EXCL‐at.speaker‐come.down‐IMPERFECTIVE
    'We are coming down'

I'll take the pattern in (55) as representative, and the one in (56) as reflecting a postsyntactic reaction to an excessively light word.

_Yeli Dnye_ (Yele, Papua New Guinea) was analyzed by Henderson (1975) as having tense prefixes, but Henderson (1995) disagrees:

"The morphemes appended to the verb root—prefixes and suffixes in many languages—are in Yele separated from the verb root on phonological grounds." (Henderson 1995, 14)

(42) K:ii mbwili ngê dpî pyódu
    banana pregnant FACT PUNCTILIAR.HABITUAL.3SUBJECT become
    'The banana tree becomes pregnant.' [Yeli Dnye (Henderson 1995, 65)]

Score so far:

370 languages the theory already handles (SOV languages with tense suffixes (362), or with metrically independent prefixes (6) or non-prefixes (2))

11 languages that require further investigation (SOV languages with tense prefixes)

4.2. Verb-initial languages

WALS statistics:

<table>
<thead>
<tr>
<th>Tense/aspect-suffixing</th>
<th>Tense/aspect-prefixing</th>
</tr>
</thead>
<tbody>
<tr>
<td>verb-initial</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>

two complications, just in case you're comparing these with the previous table:

- WALS has a category of "V initial but S and O are freely ordered after V"; those are listed as VS and VO, but not as VSO or VOS.
- WALS also has a few languages\(^1\) that are listed as "SVO in transitive clauses and VS in intransitives". We won't consider those.

\(^{1}\) e.g., Mapudungun (Araucanian), Mocovi (Guaicuruan), and Pilagá (Guaicuruan)
These numbers don't look as inviting; our theory predicts that verb-initial languages shouldn't have (prosodically dependent) suffixal tense (well, a suffixal highest affix, anyway). But there are 34 verb-initial languages with tense suffixes in the WALS database.

Consider these problematic languages:

**Verb-initial languages with tense/aspect suffixes (34):**

<table>
<thead>
<tr>
<th>Language</th>
<th>Family</th>
<th>Case Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baure</td>
<td>Arawakan</td>
<td>VOS</td>
</tr>
<tr>
<td>Garífuna</td>
<td>Arawakan</td>
<td>VSO</td>
</tr>
<tr>
<td>Goajiro</td>
<td>Arawakan</td>
<td>VSO</td>
</tr>
<tr>
<td>Ignaciano</td>
<td>Arawakan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Anindilyakwa</td>
<td>Australian (Gunwinyguan)</td>
<td>V-initial</td>
</tr>
<tr>
<td>Warrnambool</td>
<td>Australian (Pama-Nyungan)</td>
<td>V-initial</td>
</tr>
<tr>
<td>Wembawemba</td>
<td>Australian (Pama-Nyungan)</td>
<td>VOS</td>
</tr>
<tr>
<td>Gude</td>
<td>Chadic</td>
<td>VSO</td>
</tr>
<tr>
<td>Chumash (Barbareño)</td>
<td>Chumash</td>
<td>VOS</td>
</tr>
<tr>
<td>Breton</td>
<td>Indo-European (Celtic)</td>
<td>VSO</td>
</tr>
<tr>
<td>Welsh</td>
<td>Indo-European (Celtic)</td>
<td>VSO</td>
</tr>
<tr>
<td>Domari</td>
<td>Indo-European (Indic)</td>
<td>V-initial</td>
</tr>
<tr>
<td>Kariri</td>
<td>Macro-Ge (Kariri)</td>
<td>VOS</td>
</tr>
<tr>
<td>Chontal Maya</td>
<td>Mayan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Zoque (Copainalá)</td>
<td>Mixe-Zoque</td>
<td>VOS</td>
</tr>
<tr>
<td>Zoque (Ostuacan)</td>
<td>Mixe-Zoque</td>
<td>V-initial</td>
</tr>
<tr>
<td>Nicobarese (Car)</td>
<td>Mon-Khmer</td>
<td>VOS</td>
</tr>
<tr>
<td>Ik</td>
<td>Nilo-Saharan (Eastern Sudanic)</td>
<td>VSO</td>
</tr>
<tr>
<td>Karimojong</td>
<td>Nilo-Saharan (Eastern Sudanic)</td>
<td>VSO</td>
</tr>
<tr>
<td>Coos (Henis)</td>
<td>Oregon Coast (Coosan)</td>
<td>V-initial</td>
</tr>
<tr>
<td>Yagua</td>
<td>Peba-Yaguan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Costanoan</td>
<td>Penutian</td>
<td>V-initial</td>
</tr>
<tr>
<td>Sahaptin (Northern)</td>
<td>Penutian</td>
<td>VSO</td>
</tr>
<tr>
<td>Yokuts (Yaudanchi)</td>
<td>Penutian</td>
<td>V-initial</td>
</tr>
<tr>
<td>Bella Coola</td>
<td>Salishan</td>
<td>VSO</td>
</tr>
<tr>
<td>Chontal (Huamelultec Oaxaca)</td>
<td>Tequistlatecan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Nahuatl (Huasteca)</td>
<td>Uto-Aztec</td>
<td>VSO</td>
</tr>
<tr>
<td>Nahuatl (Michoacán)</td>
<td>Uto-Aztec</td>
<td>V-initial</td>
</tr>
<tr>
<td>O'odham</td>
<td>Uto-Aztecan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Pipil</td>
<td>Uto-Aztecan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Tepehuan (Northern)</td>
<td>Uto-Aztecan</td>
<td>VSO</td>
</tr>
<tr>
<td>Tepehuan (Southeastern)</td>
<td>Uto-Aztecan</td>
<td>V-initial</td>
</tr>
<tr>
<td>Kyuquot</td>
<td>Wakashan</td>
<td>VSO</td>
</tr>
<tr>
<td>Makah</td>
<td>Wakashan</td>
<td>VSO</td>
</tr>
</tbody>
</table>
31 of these 34 languages turn out to be explicable under the theory developed here. The remaining 3 require further study.

### 4.2.1 Explaining the explicable

The 31 "explicable" languages fall into the following categories:

- not clearly verb-initial (6)
- not really tense/aspect-suffixing (8)
- "tense/aspect" arguably not the highest affix (3)
- arguably exhibit EPP effects (10)
- root has metrical structure (4)

We'll consider each of these in turn.

#### 4.2.1.1 Not clearly verb-initial (6)

Dryer (2008):
"The rule of thumb employed is that if text counts reveal one order of a pair of elements to be more than twice as common as the other order, then that order is considered dominant…"

As rules of thumb go, this one is pretty permissive…

6 of the languages in the "problematic" list are described by authors of grammars or other works about them as having fairly free word order, without the freedom being explicitly associated with emphasis, topic, or focus.


(43) a. mwipwina mwiitjiyanga akwithangwe kimwingwirthinamwa
    that.unseen boat near will.be.sinking
    'That boat will be sinking' (p. 454)

b. ana anhinga ningalyipwarnamwa ngayiwa kilhikatjawa lhikwiniyawa
    this food 1.EXCL.SG.am.eating 1.EXCL.SG 1EXCL.SG.will.go-ALL last
    'I am eating this food [and] I will be going later' (p. 460)
**Coos** (Oregon Coast: Coosan): Frachtenberg (1922, 426)

(44) X'ōwā'yas hān dijilec xal'emats
    snake  his  at.thighs  it.wraps.around.him
Hān we'hel la' he'laq  ē x'ōwā'yas
    his.to  waist  that  it.arrived  the  snake
'The snake coiled around his thigh. It crawled up to his waist'

**Ignaciano** (Arawakan): Ott and Ott (1967, 91)

(45) ema achane va?i maepera?ini mapera
    he  person  not  he.esteem  his.mount
'The man didn’t care for his mount'

**Northern Sahaptin** (Penutian): Rude (1997)

(46) Tílaaki i-nánan-a k'usi-na
    woman  3NOM-bring-PAST horse-OBJ
'The woman brought the horse'

**O'odham** (Uto-Aztecan): Hale and Selkirk (1984, 162-163)

(47) a. Wákial 'at g wisilo cépos
    cowboy  AUX.3.PERF DET calf  brand
    'The cowboy branded the calf'
b. Wisilo 'at cépos g wákial
    calf  at  his.mount
    'The calf is mounted by the cowboy'
c. Cépos 'at g wákial g wisilo
    his.mount  at  his.calf
    'The calf is mounted by the cowboy'

**Yokuts** (Yaudanchi) (Penutian): Kroeber (1904, 259)

(48) ama tanit yiwin an limkin tanji
    then  there.from  wife  his.prairie.falcon  go
    'Then the prairie falcon's wife went from there'

Some of these languages fall under generalizations to be offered later, as well.

---

2 Mithun (1992, 46) claims, on the basis of text counts, that the basic word order of Coos is OVS.
3 In fact, Ott and Ott (1967) appear to me to be saying that the order of S, V, and O is completely free. They write (p. 89), "In the following formulas, the tagmemes listed before the P tagmeme are fixed in order. The mutual order of all other tagmemes is optional." Their formula for a declarative transitive clause is then (p. 89) "±Intro:intro/Cl 106-107 ±Neg:neg/Warn:warn +P tr:Vb 11 ±O:N 3/5/7/9-11/15 ±S:N 1-2/5 pro 5 ±T:N 9/18/21/Cl 101-102 ±L:N 4/11/13-15 ±Ref:Cl 101 ±Req:req ±Hes:pro 10]". In this formula, P is the transitive verb, and the tagmemes listed before it are "Intro" (introductory particles with meanings like "then" and "so") and "Neg" (negation). These are the two tagmemes which should be in a fixed order, by their description; "all other tagmemes", which includes P (the verb), S, and O, are freely ordered.
4 Kroeber (1904, 233): "...the order of words in the Yaudanchi sentence is rather shifting. A usual order is quite perceptible, but this is often departed from. As regards the three chief parts of the sentence, the verb most frequently comes first, the subject next, and the object last."
4.2.1.2. Not really tense/aspect-suffixing (8)

For 4 of the languages on the WALS list, the tense/aspect morphemes in question appear to be second-position clitics rather than suffixes. If second-position clitics are free-standing in the syntax, and are cliticized postsyntactically via "prosodic inversion" (Halpern 1992), then T-support won't recognize these instances of T as needing support.

In 2 other languages, it is unclear that the tense/aspect morphemes are affixes at all.

Another 2 have, in addition to the putative tense/aspect suffix, another tense/aspect morpheme which is either a prefix or a free-standing morpheme.

(49) TP
    T  vP  non-affixal T: no EPP

The 4 tense/aspect-cliticizing languages are:

**Northern Tepehuan** (Uto-Aztecan): Bascom (1982, 280)

(50) a.  gii=á=n=ta
    fell=BASE=I=COMPL
    'I fell'
b.  ááni=a=n=t  ii
    I=BASE=I=COMPL  went
    'I went'
c.  káši=a=n=t  ii
    already=BASE=I=COMPL  went
    'I already went'


(51) a.  en-ata be ceki-a saatso
    see-3P  PAST woman-ACC  yesterday
    'They saw the woman yesterday'
b.  na  be ceki-a  en-ie  wici-a …
    when  PAST woman-ACC see-SUBJC  children-ACC
    'When the woman saw the children…'
**Kyuquot, Makah** (both Wakashan): Davidson (2002, 112, 107)

(52) a. waha•kʷ=’eyik=id ʔa•beyuƛ=’iq
go.PERF=FUT=INDIC.1PL  tomorrow=ART
'We will go tomorrow'
b. yu•qʷa•=aƛ=(b)it=s dudu•k=’aƛ
likewise=TEMP=PAST=INDIC.1SG  sing=TEMP
' Operators include the fact that the auxiliaries function for stress like independent words, and the fact that they can take prefixes:

**Garifuna** (Arawakan): Kaufman 2010

(54) a. N-ari-ha  ni-dibu
1SG.G-see-VRBL  PROG.2SG.D
'I am seeing you'
b. Ari-ha  n-a  mesu le
see-VRBL  1SG.G-PRF  cat  DEF.MSC
'I already saw the cat'

Finally, two languages from the list have, in addition to what look like tense or aspect suffixes, other morphemes indicating tense or aspect which are prefixes, or possibly free-standing words:

**Chontal Maya** (Mayan): Knowles (1984, 228, 231)

(55) a. muk’ ʔu  tāb-o
PROG A3  climb-IMPERF.INTRANS
'He is climbing'
b. mu? ʔu  hāe’-eʔ-Ø
PROG A3  hit-IMPERF.TRANS-B3
'He is hitting it'
c. ʔa  k’ot-Ø-on
ASP  arrive-PERF.INTRANS-B1
'I already arrived'
d. ʔa  kā  k’uš-i-Ø
ASP A1  eat-PERF.TRANS-B3
'I had already begun eating it'

---

5 These examples are Makah. Makah and Kyuquot are similar dialects of Nuuchahnulth (Nootka), and multiple sources refer to Kyuquot as having tense clitics, but I have not yet found the actual Kyuquot examples.
**Gude** (Chadic): Hoskison (1983, 82)

(56) **kə** kii Musa faara

**PERF** throw-**PERF** Musa stone

'Musa threw a stone'

### 4.2.1.3 "Tense/aspect" arguably not the highest affix (3)

There are three languages in the problematic list which are indeed verb-initial, and do indeed have suffixes that are labelled by grammars as reflecting tense or aspect, but which appear to have verbal prefixes that can be argued to be higher than the problematic tense/aspect suffixes.

Recall that the prediction of the theory is just that verb-initial word order should be impossible if the highest affix is a metrically dependent suffix; lower suffixes might cause phrases to move in the course of the derivation, but the verb will then move past them to pick up the higher affixes.

(57) \[
\text{XP} \\
\text{X-} \\
\text{TP} \\
\text{-T} \\
\text{vP}
\]

**Suffixal T/Asp, but a higher prefix masks its effects**

The three languages in this category are Bella Coola (Salish), and the two Celtic languages Welsh and Breton.

- **Welsh** (Indo-European (Celtic))

Welsh verbs may optionally be preceded by particles which indicate things like negation, affirmation, and clause type:

(58) a. **Mi** welais i Siôn  

**AFF** saw-1SG I John

'I saw John'

b. **Ni** ddarllenodd Emrys y llyfr

**NEG** read Emrys the book

'Emrys didn't read the book'

c. y dynion [**a** ddarllenodd y llyfr]

the men **REL** read the book

'the men who read the book'

d. Dw i 'n meddwi [ y dylech chi ddeud wrtho fo]

am I **ASP** think **DECL** ought you say to-3SG he

'I think you ought to tell him'

These particles trigger various mutations of the initial consonant of the following verb, which become optional if the particles are dropped (though it is apparently becoming common to retain the mutation even if the particles are missing (King 2003, 185))
(59)  a. (Mi) weles  i ti ddoe
      AFF SOFT.MUTATION-saw-1SG  I you yesterday
       'I saw you yesterday'
b. (*Mi) gweles  i ti ddoe
      AFF saw-1SG  I you yesterday

(60)  a. Collodd  e'r arian
      lost  he-the money
       'He lost the money'
b. Gollodd  e'r arian?
      SOFT.MUTATION-lost  he-the money
       'Did he lose the money?'c. Cholles  i ddim byd
      ASPIRATE.MUTATION-lost-1SG  I not  anything
       'I didn't lose anything'

If we can regard these mutations as mutation-causing prefixes, then we're all set; Welsh verbs routinely begin with prefixes that are associated with things like negation, embedding, affirmation, question, etc.

• **Breton** (Indo-European (Celtic))

Breton is verb-initial only in embedded clauses, and is V2 in matrix affirmative clauses:

(61)  a. [Ar vugale] o deus gwal'het ar wetur dec'h
       the children  PRT have.3PL washed the car yesterday
       'The children washed the car yesterday'
b. [Ar wetur] o deus ar vugale gwalc'hets dec'h
       the car  PRT have.3PL the children washed yesterday
       'The children washed the car yesterday'
c. [Dec'h] o deus ar vugale gwalc'hets ar wetur
       yesterday  PRT have.3PL the children washed the car
       'The children washed the car yesterday'
d. [Gwal'cin ar wetur] o deus graet
       wash the car  PRT have.3PL done
       'They really did wash it'

(62)  a. Kredin ran [ en deus aret Yann e bark]
       believe  do.1SG PRT have.3M plowed Yann his field
       'I believe that Yann has plowed his field'
b. *Kredin ran [[Yann] en deus aret e bark]
       believe  do.1SG Yann  PRT have.3M plowed his field
       'I believe that Yann has plowed his field'
Just as in Welsh, the Breton verb is immediately preceded by a variety of particles (o and en in the examples above), which trigger mutations at the beginning of the verb; if these mutations are prefixes, then there should be no EPP effects.

**Bella Coola** (Salish)

WALS lists Nater (1984, 60) as its source for the claim that tense and aspect morphemes are suffixes in this language. And, indeed, he has a long list of Bella Coola suffixes, some of which have names that look like good names for aspects:

"The verbal suffixes are: …-a(n)m/-a)(l)c inchoative, -t-nm2 / -nm2 habitual, nu-s-X-mc predilectional, (nu-X)-ik/-al-us desiderative…” (Nater 1984, 60)

But in fact, these suffixes appear to be derivational rather than inflectional.

Nater (1984, 72): "When affixed to verbo-adjectival statives, -ann is glossed as to become increasingly Xer: scamm to get worse and worse, to wear out (sc bad).... When following a verbal base that describes a seasonal, routinely, or regularly performed activity, -ann means it is time for one to X, one must go Xing now: 7ilhtsayanmts it is (the) time (of the year) for me to (start) pick(ing) berries (7ilh-tsay), 7alhpsanmts I must eat (7alhps) now."

Nater (1984, 73): "The habitual suffixes -t-nm2 and -nm2 are affixed to transitive performative bases. The majority of the resulting complex verbs typically expresses communal-benefactive activities (often prolonged): to X with or for the benefit (entertainment) of other individuals...and often describe some household or other routinely performed acti, occupation, profession, or a specific role in a competitive game or contest. -t-nm2 appears only in the following items: tsilhnm "to break (tslh) the string"=to be the winner in a race... sp-alustnm to be splitting wood (-alus) (sp' to hit something with an object)…"

Nater (1984, 73): "-nm2 is more productive than -t-nm2: mnts'-aqw'snm to crush, squeeze berries (to extract the juice) (mnts'aqw's to squeeze berries)…qat'iixwmn 'to pull towards oneself (qat') plant tops (-iixw)" = to be picking elderberries, sp'lxsnm 'to be hitting (sp') the end (-lx)" = to hit the Morse key, wire a telegram, (use the) telephone…"

But Bella Coola also has aspectual prefixes, which appear to be more productive and inflectional:

Nater (1984, 96-97): "7alh- stative-progressive … Before predicates (inflected verbs), 7alh-conveys progressivity - to be Xing: 7alh7ayutsmtim somebody was telling (7ayutsm) them to…, 7alhpik'm sparks are flying around \(\sqrt{pik}'\ to shine, glitter, spark), 7alhp'uyaax (tree) lies fallen (p'uyaax)." 

So, yes, Bella Coola has suffixes that are called "aspectual" in Nater's grammar, but it also has aspectual prefixes, and the latter seem more inflectional (hence higher) than the former.
4.2.1.4. Exhibit possible EPP effects (10)

Ten of the languages in the "problematic" list can be seen as satisfying the EPP via unorthodox means.

- **Yagua** (Peba-Yaguan)

Yagua certainly does have suffixal tense (Payne (386-387)):

- jásiy 'PROX1' (within a few hours ago)
- jay 'PROX2' (a day ago)
- siy 'PAST1' (a week to a month or so ago)
- tìy 'PAST2' (a month to maybe two years ago)
- jada 'PAST3' (more than two years ago)

And, as we'll see, Yagua sentences are generally verb-initial, though it's possible to front DPs for emphasis.

Yagua has two types of verbal agreement: Set I (=Ergative?) is prefixed to the verb, while Set II (=Absolutive?) encliticizes to whatever's immediately before the Absolutive argument:

(63) a. siimiyí Alchíconíí quiivá (Payne and Payne 1990, 255)
    sa-jimiyí Alchíco-níí quiivá
    3sgERG-eat Alchíco-3sgABS fish
    'Alchíco is eating the fish'

    b. siimiyí sinumunií quiivá
    sa-jimiyí sinu-mu-níí quiivá
    3sgERG-eat land-LOC-3sgABS fish
    'He is eating the fish on land'

Intransitive verbs come in two classes. Some have only Ergative agreement:

(64) a. sa-muráý Manúngo
    3sgERG-sing.to.call.spirits Manúngo
    'Manúngo is singing to call the spirits'

    b. Manúngo muráý
    Manúngo sing.to.call.spirits

These verbs are always preceded by either the Ergative agreement or the subject (but not both).
Another class of intransitive verbs have only Absolutive agreement:

(65)  múúy jùŋñíí    (Payne and Payne 1990, p. 256)
múúy jùŋñ-ńíí
there fall-3sgABS
'There he falls'

Verbs in clauses with only Absolutive (non-prefixing) agreement "...are most commonly preceded by a locative demonstrative diíy 'there (near)', jásiy 'there (yonder),' or múúy 'there (distant)'. Examples like [(66)] were judged ungrammatical without the initial locative" (Payne and Payne 1990, p. 257)

They do also note that there are other examples that are acceptable without these locatives:

(66)  siimyaasiy suŋsiyũnií
siy-maasiy sa-jũsiy-jũ-ńíí
run-go.out 3sgERG-behind-ADLAT-3sgABS
'He runs out behind him'

Various ways we could imagine handling this particular example; this is something to study further.

Pending future study, though, it looks as though Yagua verbs are generally preceded by (i) a full DP, (ii) a locative expression, or (iii) an Ergative agreement morpheme.

(67)  TP
    {DP Loc Agr-}
        -T  vP

EPP, satisfiable by DP, Locative, or Agreement proclitic

That would be a nice result, because a lot of the "problematic" languages have obligatory agreement prefixes. Maybe these languages are all really Yagua in disguise.

**Barbareño Chumash** (Chumash): Beeler 1976

(68)  a. k-iwa-ulîš
    1-a.while-hold
    'I will hold it for a while'

b. s-iy-qili-toxš liy'al'ališaw (p. 264)
    3-PL-HABIT-fight every.day
    'They used to fight every day'

[Note that Barbareño Chumash also has tense/aspect prefixes, in addition to its tense/aspect suffixes…]
Goajiro (Arawakan): Holmer 1949
Holmer (1949) recognizes two major types of tensed indicative verb. The finite indicative is only possible for transitives, and involves obligatory agreement prefixes/proclitics:

\[(\text{69})\]
\begin{align*}
\text{a. } & \text{t-er-ē-či} \\
& \text{1SGSUBJ-see-FUT-3MSGOBJ} \\
& 'I will see him' \\
\text{b. } & \text{pu-tūk-ir-e-ra} \\
& \text{2SGSUBJ-sleep-CAUS-FUT-3SGOBJ} \\
& 'You will put her to sleep'
\end{align*}

The participial form can appear with transitives and intransitives, and has no pronominal prefix, but always prefixes \textit{a-}:  

\[(\text{70})\]
\begin{align*}
\text{a. } & \text{a-sō-š} \ taya \ wəi \\
& \text{PART-drink-DUR I water} \\
& 'I drink water' \\
\text{b. } & \text{a-ukt-e-č} \\
& \text{PART-die-FUT-3MSG} \\
& 'He will die'
\end{align*}

→ all the verbs have some prefix (either an agreement prefix/proclitic, or the participial-forming \textit{a-}).

Karimojong (Nilo-Saharan (Eastern Sudanic)): Lesley-Neuman 2007
"The Karimojong verb has two prefix slots before the stem, and three suffix slots following it. The first prefix slot, occupied by either a pronominal prefix or an infinitive prefix, is obligatory."
(Lesley-Neuman 2007, p. 15)

\[(\text{71})\]
\begin{align*}
\text{a. } & \text{â-dōŋ-i} \\
& \text{3SG-pinche-IND.ACT.PAST.PROG} \\
& 'He was pinching' \\
\text{b. } & \text{âkâ-limōkín-i} \ əqoine \ iji \ ūŋ \\
& \text{1SG.2SG-tell-IND.FUT I you.SG}
\end{align*}

Nahuatl (Huasteca) (Uto-Aztecan): Beller and Beller 1979
\[(\text{72})\]
\begin{align*}
\text{ni-h-cayana-s} \ \text{no-yoyo} \\
& \text{1SG-3INAN-tear-FUT my-clothes} \\
& 'I will tear my clothes'
\end{align*}

Nahuatl (Michoacán) (Uto-Aztecan): Sischo 1979
\[(\text{73})\]
\begin{align*}
\text{ni-h-kōc-ti-aŋ} \\
& \text{I-him-sleep-CAUS-PAST} \\
& 'I put him to sleep'
\end{align*}
Pipil (Uto-Aztecan): Campbell 1985

(74) ti-nech-ita-k (p. 56)
    you-me-see-PAST
    'You saw me'

Baure (Arawakan): Danielsen 2007

(75) a. ro-moroko-w (p. 256)
    3SG-dry-COP
    'It is dry'
b. ro-moroko-wapa
    3SG-dry-CHANGEOFSTATE
    'It is drying'
c. ro-moroko-pa
    3SG-dry-GO
    'It is going to be dry'

Wembawemba (Australian: Pama-Nyungan): Hercus 1986

In Wembawemba, agreement is a 2\textsuperscript{nd} position clitic:

(76) a. dag-in-anda ginmer bembengu bi\-\textael-u djelig-djelig (p. 51)
    hit-PAST-1SG.SUBJ these children stick-ERG yesterday
    'I hit these children with a stick yesterday'
b. wemba-nda nja-in manjam djelig-djelig (p. 52)
    not-1SG.SUBJ see-PAST him yesterday
    'I didn't see him yesterday'
c. winjar-ar njembar-a (p. 53)
    who-2SG.SUBJ await-PRES
    'Who are you waiting for?'


Warrnambool was closely related to Wembawemba, and probably also had 2\textsuperscript{nd}-position clitic agreement:

(77) a. Parta-n-u kuramuk
    kill-PAST-1 possum
    'I killed a possum'

b. Nhunambi-war wakumba-n
    those-2PL go.away-PAST
    'You all went away'
4.2.1.5. Root has metrical structure (4)

4 of the languages in the "problematic" list are arguably like Seri and Ket, in that the tense suffixes are being attached to a root that already has metrical structure. Evidence for this comes from the fact that stress in these languages is unaffected by affixation, and always appears in a fixed position on the root.

(78) \[ \text{Suffixal T preceded by a foot boundary, satisfying T-support} \]
\[
\text{FOOT}-\text{T} \quad \text{vP}
\]

- **Domari** (Indo-European (Indic))
  Matras (1999, 13) says that stress on verbs is reliably on the syllable before certain suffixes, including the tense suffix and object agreement suffixes:

  (79) a. lahed-óm
  saw-1SG
  'I saw'
  b. lahed-óm-a
  saw-1SG-PRET
  'I had seen'

- **Southeastern Tepehuan** (Uto-Aztecan)
  Willett (1991, 21-22): "All native Southeastern Tepehuan words are accented on one of the first two syllables of the stem, including reduplicated forms. Of these two syllables, it is the HEAVIER one that is accented. If, however, they are equally HEAVY, then the first syllable is accented... The rule of accent placement crucially depends on the presence of the initial stem boundary, since it is only the first or second syllable of stems that are accented."

  (80) va-hi-tšu-ðáa.gi-ʔñ
  RLZ-INC-EXT-1S OBJ-speak-to
  'He then began speaking to me'

- **Zoque (Copainalá and Ostuacan)** (Mixe-Zoque)
  Wichmann (1995, p. 189) describes a shared innovation among the Zoquean languages, one which distinguishes them from their Mixe relatives:

  "(8.0.3) Primary word stress is shifted from being determined primarily by syllable weight to being fixed on the rightmost lexical morpheme of the word string. Polysyllables generalize the stress pattern of those pMZ polysyllables that do not contain heavy syllables, with the effect that verbs are stressed on the ultimate and nonverbs on the penultimate syllable of the root"
4.2.1.6. The mysteries (3)

Finally, three languages require further study. These are:

<table>
<thead>
<tr>
<th>Language</th>
<th>Macro-Ge (Kariri)</th>
<th>VOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kariri</td>
<td>Macro-Ge (Kariri)</td>
<td>VOS</td>
</tr>
<tr>
<td>Costanoan</td>
<td>Penutian</td>
<td>V-initial</td>
</tr>
<tr>
<td>Chontal (Huamelultec Oaxaca)</td>
<td>Tequistlatecan</td>
<td>V-initial</td>
</tr>
</tbody>
</table>

4.2.2 Conclusion

What have we learned?

- EPP can sometimes be satisfied by agreement proclitics/prefixes.
- Second position clitics are treated, for purposes of Affix Support, as though they were free-standing words in initial position (satisfy EPP in Wembawemba, and fail to trigger EPP effects in languages like Northern Tepehuan).

The original "problematic" table is reproduced here, organized by solution:

<table>
<thead>
<tr>
<th>Language</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kariri</td>
<td><img src="image-url" alt="Image" /></td>
</tr>
<tr>
<td>Costanoan</td>
<td><img src="image-url" alt="Image" /></td>
</tr>
<tr>
<td>Chontal (Huamelultec Oaxaca)</td>
<td><img src="image-url" alt="Image" /></td>
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<tr>
<td>Ik</td>
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<tr>
<td>Tepehuan (Northern)</td>
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<tr>
<td>Kuyuquot</td>
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<tr>
<td>Makah</td>
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<tr>
<td>Warrnambool</td>
<td><img src="image-url" alt="Image" /></td>
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<tr>
<td>Wembawemba</td>
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<tr>
<td>Baure</td>
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<tr>
<td>Goajiro</td>
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<tr>
<td>Chumash (Barbareño)</td>
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<tr>
<td>Karimojong</td>
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<tr>
<td>Yagua</td>
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<tr>
<td>Nahuatl (Huasteca)</td>
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<tr>
<td>Nahuatl (Michoacán)</td>
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<td>Pipil</td>
<td><img src="image-url" alt="Image" /></td>
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<tr>
<td>Garifuna</td>
<td><img src="image-url" alt="Image" /></td>
</tr>
<tr>
<td>Language</td>
<td>Family</td>
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<td>-----------------------</td>
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<tr>
<td>Gude</td>
<td>Chadic</td>
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<tr>
<td>Chontal Maya</td>
<td>Mayan</td>
</tr>
<tr>
<td>Nicobarese (Car)</td>
<td>Mon-Khmer</td>
</tr>
<tr>
<td>Ignaciano</td>
<td>Arawakan</td>
</tr>
<tr>
<td>Anindilyakwa</td>
<td>Australian (Gunwinyguan)</td>
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<tr>
<td>Coos (Hanis)</td>
<td>Oregon Coast (Coosan)</td>
</tr>
<tr>
<td>Sahaptin (Northern)</td>
<td>Penutian</td>
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<tr>
<td>Yokuts (Yaudanchi)</td>
<td>Penutian</td>
</tr>
<tr>
<td>O’odham</td>
<td>Uto-Aztecan</td>
</tr>
<tr>
<td>Breton</td>
<td>Indo-European (Celtic)</td>
</tr>
<tr>
<td>Welsh</td>
<td>Indo-European (Celtic)</td>
</tr>
<tr>
<td>Bella Coola</td>
<td>Salishan</td>
</tr>
<tr>
<td>Domari</td>
<td>Indo-European (Indic)</td>
</tr>
<tr>
<td>Zoque (Copainalá)</td>
<td>Mixe-Zoque</td>
</tr>
<tr>
<td>Zoque (Ostuacan)</td>
<td>Mixe-Zoque</td>
</tr>
<tr>
<td>Tepehuan (Southeastern)</td>
<td>Uto-Aztecan</td>
</tr>
</tbody>
</table>

### 4.3 Final Score

432 languages the theory handles:
- 362 SOV languages with tense suffixes,
- 8 SOV languages with metrically independent tense morphemes,
- 31 V-initial languages with tense prefixes,
- 31 "explicable" V-initial languages with tense suffixes

14 languages that require further investigation:
- 11 SOV languages with tense prefixes,
- 3 V-initial languages with tense suffixes

The theory succeeds for roughly 97% of the verb-peripheral languages in the WALS database. The rates of success for SOV and for V-initial languages are not statistically significantly different \( (p \approx 0.4) \)
4.4 After the final score

The final score was reached via the following strategy:

[ predicted by the theory ] → [ uncritically accept ]
[ not predicted ] → [ scrutinize very carefully ]

Not a great strategy.

For one thing, I've been offering an account of, for example, the V-initial, "tense-suffixing" languages that predicts that such languages should always have certain properties. We should check and make sure that these aren't just properties of, for example, V-initial languages in general.

But there are several clear cases of verb-initial languages that don't have any of the special properties of the "tense-suffixing" ones:

Rukai
• stress is generally initial in the word (Zeitoun 2007, 26)
• word order really is verb-initial:

(81)   a.  o-kane  velevele tamatama
       DYN.FIN-eat  banana  middle.aged.man
       'The middle-aged man is eating/ate a banana'

b.  o-kane  tamatama  velevele
       DYN.FIN-eat  middle.aged.man  banana
       'The middle-aged man is eating/ate a banana'

• no agreement morphology on the verb, and tense/aspect genuinely is a prefix, and usually the highest morpheme.

Tagalog
• mostly ditto:

(82)  N-agbili  ang  lalaki  ng  saging
       PERF-sell  ANG  man  UNM  banana
       'The man sold a banana'

• (except that Tagalog stress is more complicated than that; default stress is final, with lexically accented morphemes attracting stress to themselves; there is one lexically accented aspect morpheme, but the others are not lexically accented; it's not a property of that class of morphemes, unlike in, say, Spanish).

(see also Cebuano, Malagasy, Tukang Besi)
5. Conclusion

There is no "EPP parameter". Universal principle:

**Affix Support**: An affix must, in the syntactic representation, be adjacent to material with metrical structure in the direction of affixation.

Material that can satisfy this requirement includes:

- maximal projections
- predictable word-internal metrical boundaries
- agreement clitics

Language variation is a matter of parameters referring to directly observable properties: whether the highest verbal affix is a prefix or a suffix, how stress is assigned within the verb, the presence or absence of obligatory agreement proclitics, and head direction.

Where is Affix Support enforced?

I've been claiming that the answer is "syntax"--but a version of syntax with a very limited amount of information about the final phonological structure. Syntax clearly is operating in ignorance of various morphophonological facts that may not come into the representation until later: the computation that enforces Affix Support doesn't know about Spanish irregular verbs, Finnish pro-drop, the fact that agreement proclitics in fact have no robust metrical structure, etc., etc.

More generally, the syntax apparently contains no lexically idiosyncratic information, just information that's predictable from syntactic label ("the T morphemes in this language are all suffixes preceded by metrical boundaries"). Not obvious that there's any segmental information.

Some remaining questions:

- why should this be true?
- some languages satisfy EPP with subjects (English), others don't have to (Japanese). Why?
- why can't Rotation satisfy Affix Support?
  (important that it can’t, or head-final would mean no EPP)

Here's a stab at "why should this be true?:

---

6 see Bye and Svenonius (2010) for one approach to lexical insertion that could have this property.
There’s a literature on clitics (e.g., Selkirk 1995, Werle 2009, and Harizanov 2014) that proposes that what makes clitics special is just that they’re prosodically deficient. And then the idea is that there are conditions on how prosodic structures can be built which guarantee that a clitic will have to attach to a host. Selkirk’s (1995) Exhaustivity, for example, says that a phonological phrase has to consist entirely of phonological words. Which is why you get structures like:

(83) phonological phrase
    prosodic word   prosodic word
    nonclitic     clitic     nonclitic

Here the clitic attaches to the preceding nonclitic because the clitic is not a prosodic word—if it were just to attach to the phonological phrase, Exhaustivity would be violated.

The literature above assumes that structures like (83) are built postsyntactically. Suppose we gave up on that assumption, and assumed instead that construction of the prosody begins in the narrow syntax. Then terminal nodes that aren’t complete words would be subject to the requirement that they have complete words to attach to. Affixes aren’t complete words, so…

many issues, including:

•  what about roots?
  •  why don’t affixes end the derivation attached to the phrases they ‘cliticize’ to?

Let’s discuss.

What we end up with, on this account, is a picture of syntax in which there may not be syntactic parameters:

•  we don’t specify whether a given language “has the EPP” or not; that’s an emergent property
•  there are phonological parameters, and morphological parameters…
•  …interacting with a cross-linguistically invariant syntax.

•  (and, if the speculations about clitics on this page are right, then some of what we’ve said may reduce to “the construction of prosodic structure begins during the narrow syntax, and syntax may perform operations that are driven by the need to improve prosodic structure.” We may not need much else, for what we’ve done today)

For students seeking a grade in this course: here’s one topic that you could work on for a final squib. Find a language, or group of languages, not discussed above, and try the theory out on them (the theory does not have to succeed for you to get a good grade…)
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