Structuring the Pima Clause

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0 Introduction

The problem:

- 'O’odham (Tohono ‘O’odham and Akimel ‘O’odham, Uto-Aztecan) word order is very flexible: all orders of subject, object, and verb are observed;
- Similar (but more restricted) flexibility is found in the particle system;
- Some have argued that 'O’odham clause structure is (essentially) flat, with few (to no) movements; i.e., ‘O’odham is “non-configurational” (Miyashita, Demers, and Ortiz (2003); see also Jelinek (1984));
- Others have argued that ‘O’odham clause structure is highly articulate, with many movements; i.e., ’O’odham is “configurational” (Hale et al., 1977; Hale and Selkirk, 1987);
- What’s going on here?

My goals:

- Provide convincing arguments in support of articulated structure in Pima;
- Suggest a framework for investigating what the structure actually is;
- NB: I will not argue for any particular structure here.

1 On Auxiliaries, Verbs, and NPs

- Pima clauses typically contain an auxiliary and a predicate.
- Auxiliaries agree with the subject and are inflected for aspect and modality. I count the imperative marker $g$ as an auxiliary here.
- Verbs agree with the object and are inflected for aspect.
- There may or many not be syntactic arguments in the language (Jelinek, 1984). There may or may not be determiners in the language (Baker, 1996). I remain agnostic for present purposes, and call (pro)nominal phrases “NPs”. These NPs do not carry case.
All logically possible orders of subject, object, and verb are attested. The examples below show four of the six. These sentences differ only in information structure.¹

(1) a. SVO
Vées hemajkám 'o s- hoohid heg 'e= je'e.
all person AUX:IMP ST- like DET ANA= mother
'Everybody likes his own mother.'
b. OVS
'e= je'e 'o s- hoohid heg vées hemajkám.
c. VOS
S- hoohid 'o heg 'e= je'e heg vées hemajkám.
d. √ VSO
S- hoohid 'o heg vées hemajkám heg 'e= je'e.

The auxiliary is typically the second constituent of the clause, but occasionally it is initial.²

(2) Tp bò hú 'i vo ńei heg Huan.
PF:PROB far INCEP IRR sing DET Huan
'Juan will probably sing.'

1.1 The structure of S, O, and V

Two hypotheses about the structure of 'O'odham clauses are found in the literature.

Hale, Jeanne, and Platero (1977) and Hale and Selkirk (1987) argue that 'O'odham clauses are head final, with extraposition rules moving elements to the edges. Evidence for this is found in the intonational structure of the clause.

(3) a. (L HHH HHH H L)

Nat g wákial g wisilo cépos.
Q:AUX:PF DET cowboy DET calf brand
'Did the cowboy brand the calf.' (Hale and Selkirk, 1987)

b. 

AUX
  nat 

  NP
    Art
    g wákial 
  N

  NP
    Art
    g wisilo 
  V 

cépos

¹I use the checkmark (✓) for sentences that were invented by a non-native speaker (usually me), but judged as acceptable by a native speaker.

²Hale remarked that this was more common in the future tense. The evidence available to me appears to support this claim, but I do not know of any explanation for it.
(4) a. (L H L) (HLL) (HLL)
   Nat cēpos g wakial g wisilo.
   Q: AUX:PF brand DET cowboy DET calf
   ‘Did the cowboy brand the calf.’ *(ibid.)*

    b. 

    AUX
     \__________\  \__________\  \
     |                |                |
     VP               VP               NP
     \__________\  \__________\  \
     |                |                |
     VP               VP               NP
     \__________\  \__________\  \
     |                |                |
     V                Art               N
     \__________\  \__________\  \
     |                |                |
     cēpos             g               wisilo

➤ Miyashita, Demers, and Ortiz (2003) argue instead that the structures of such sentences are flat. Apparent “arguments” are actually adjuncts, and thus never occurred in an argument position. As adjuncts, they can occur in any order.

(5) a. Nat g wakial g wisilo cēpos.
   Q: AUX:PF DET cowboy DET calf brand
   ‘Did the cowboy brand the calf.’ (Miyashita et al., 2003)

    b.

    IP
     \__________\  \__________\  \
     |                |                |
     Q               INF
     \__________\  \__________\  \
     |                |                |
     N               -at               DP
     \__________\  \__________\  \
     |                |                |
     N               D               N
     \__________\  \__________\  \
     |                |                |
     g               wakial             g               wisilo

➤ Looking at arguments alone is not going to be very helpful for deciding the issue.

2 On Particles and Adverbs

➤ The *midfield* is the region starting with the end of the auxiliary, extending to the beginning of the verb.

➤ This definition is invalid in verb-initial sentences. I take this issue up in section 3.4.

2.1 Flexible Ordering

➤ The order of elements within the midfield can be quite free.

(6) a. John 'ash  cum  ga'i  gook 'o'ohan  ha=  nei.
    John AUX:EVID INT  only  two  PL,book  IRR 3PL= read
    ‘John is only supposed to read two books.’
b. √ John 'ash ə cum [ga’] gook 'o”ohan ha=ñe.  

c. √ John 'ash ə [ga’] cum gook 'o”ohan ha=ñe.  

d. √ John 'ash [ga’] ə cum gook 'o”ohan ha=ñe.  

> Pulling out ga’i ‘only’, all six logically possible orders are found between the remaining elements in the midfield.

(7) a. John 'ash ə cum gook 'o”ohan ha=ñe.  
John AUX:EVID RRR INT two book 3PL= read  
‘John is supposed to read two books.’

b. √ John 'ash o gook 'o”ohan cum ha=ñe.  

c. John 'ash cum ə gook 'o”ohan ha=ñe.  

d. √ John ‘ash cum gook ’o”ohan o ha=ñe.  

e. √ John ‘ash gook ’o”ohan ə cum ha=ñe.  

f. √ John ’ash gook ’o”ohan cum o ha=ñe.  

2.2 Stricter orderings  
>
When particles are chosen carefully, the freedom in word order disappears.

(8) a. Mat ə sha juu, t o hii heg Huan.  
C:AUX:PF RRR CNTR rain(PF) PF RRR go(PF) DET Juan  
‘If it rains, Juan will go.’

b. *Mat sha ə juu, t o hii heg Huan.  

(9) a. Pi ‘añ mu’i ə [shel] [si] gook 'o”ohan ha= nolav.  
not AUX:LS much very often two book 3P= buy  
‘I don’t buy two books very often.’


> Similar effects are seen in ordering particles relative to the auxiliary and predicate.  
These orders can be allowed or not, depending on the particle.

(10) a. John ’atp ə cikpanad.  
John AUX:PF:PROB RRR work  
‘John might be working.’

b. * ə ’atp cikpanad heg John.  

c. *John ’atp cikpanad ə.
   John AUX:IMP not a.bit very tall  
   'John is not very tall.'  
b. [pi] 'o sha'i si coatk heg John.  
c. *John 'o sha'i si coatk [pi].

(12) a. Pi 'ant hemuj o sha'i ha= nolav heg kalit.  
   not AUX:IS:PF soon IRR A.BIT 3P= buy DET car  
   'I'm not going to buy a car anytime soon.'  
b. √Hemuj 'ant pi o sha'i ha= nolav heg kalit.  
c. √Pi 'ant o sha'i ha= nolav heg kalit hemuj.

2.3 A Circular Argument

➢ In the Tohono variety of 'O'odham, the linear order of elements can be described by a circular ordering.

   sha

   o

   pi

➢ That is, the negative form of (8) above exhibits the following patterns (Kroch and Marshall, 1973).

(13) a. pi o sha  
b. sha pi o  
c. o sha pi  
d. *pi sha o  
e. *sha o pi  
f. *o pi sha

➢ Note that in these patterns, precedence is not a transitive relation. This means that linear precedence is not necessarily transitive. Knowing pi > sha, o > sha, and o > pi, one cannot conclude that o > pi > sha is valid.

➢ This particular circular pattern does not occur in Pima (the Akimel variety of 'O'odham).

(14) a. pi o sha  
b. *sha pi o  
c. o sha pi  
d. *pi sha o  
e. *sha o pi  
f. o pi sha

➢ The moral of the story: One has to be very careful in determing the order of elements. My orders involving three particles/adverbs, then, are not as secure as I would like.
3 Organizing Chaos

➢ I take the data in (10-12) as a starting place for organizing the data.

Class 1: These elements only occur in the mid-field - they cannot occur before the auxiliary or after the predicate. As far as I can tell, these are always individual words, never phrases.
E.g., (v)o IRREALIS, sha COUNTERFACTUAL, 'absh ‘just’

Class 2: These elements occur either in the mid-field or before the auxiliary - they cannot occur after the predicate. Some of these are individual words, others are phrases.
E.g., pi 'not', koi 'not yet', 'am DISTAL DEICTIC, si 'very, really’.

Class 3: These element occur in the before the auxiliary, in the mid-field, or after the predicate. These can be single words, phrases, and (admitting some degree of abstraction) clauses. This is the category for NPs and PPs.
E.g., hemuj ‘now, soon’, 'ep ‘again’, tako ‘yesterday’

➢ Two caveats:

1. This categorization is overly broad. It will have to be refined.
2. The claims I am going to make based on this categorization force stricter orderings than are actually observed.

3.1 Internal structure of Classes 1 and 2

➢ Within Class 1 and Class 2, strict orders can be defined. The following are partial examples.

1. Class 1:

<table>
<thead>
<tr>
<th>'absh</th>
<th>'just'</th>
<th>IRREALIS</th>
<th>COUNTERFACTUAL</th>
</tr>
</thead>
</table>

2. Class 2:

<table>
<thead>
<tr>
<th>pi</th>
<th>koi</th>
<th>'am</th>
<th>hu</th>
</tr>
</thead>
<tbody>
<tr>
<td>'not'</td>
<td>'not yet'</td>
<td>DEICTICS</td>
<td>'far'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>pi</th>
<th>si</th>
<th>shel</th>
</tr>
</thead>
<tbody>
<tr>
<td>'not'</td>
<td>'very'</td>
<td>'often'</td>
</tr>
</tbody>
</table>

➢ The order of Class 1 was shown above for (v)o and sha (8).

➢ The order in Class 2 is always observed. Data in support of the lower order was given in (9).

➢ The lower order for Class 2 is surprising: an intensifier preceding frequency does not fit my normal intuitions. How do we know si shel ‘very often’ isn’t a unit?

(15) a. Pi ‘añ mu’į [si] [shel] gook 'o’ohan ha= nolav.
not AUX:1S much very often two Pl.book 3P= buy
‘I don’t buy two books very often.’ (= 9a)


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3I use the term ‘counterfactual’ following suggestions by Saxton, Saxton, and Enos (1983). There is reason to doubt this goes (Pam Munro, personal communication).
3.2 Class 1 and 2 together

➢ The elements of the various classes are not strictly ordered relative to each other.¹

C:AUX:PF not IRR CNTR rain(PF) PF IRR go(PF) DET Juan

‘If it doesn’t rain, Juan will go.’

b. Mat o [pi] [sha] ha juu, t o hii heg Huan.
C:AUX:PF IRR not CNTR at.all rain(PF) PF IRR go(PF) DET Juan

‘If it doesn’t rain at all, Juan will go.’

c. √ Mat o [sha] [pi] juu, t o hii heg Huan.

(17) a. Gook ’o”odham ’ash cum [pi] [lam] hu vo fei.
two PL:person AUX:EVID INT not FR far IRR sing(PF)

‘Two people aren’t supposed to sing.’

b. [Pi] ’att o [pi] [lam] hu shai hihi.
not AUX:1P:PF IRR not FR far a.bit PL:go(PF)

‘We won’t go.’

3.3 Superiority-like effects in Class 2

➢ As mentioned above, elements of Class 2 can be moved in front of the auxiliary. When this happens, the basic order of elements must be maintained across the auxiliary.

(18) a. Pi ’ant o sha’i vees ha= fei hegam geget ’o”ohan.
not AUX:1S:PF IRR a.bit all 3P= read those PL:big PL:book

‘I will not read all those big books.’

b. * [M] ’ant o [pi] sha’i vees ha= fei hegam geget
FR AUX:1S:PF IRR not a.bit all 3PL= read those PL:big

’o”ohan.
PL:book
‘I will, I will not read all those big books.’

(19) a. Gam [g] hu ’upam him!
FR IMP far back go

‘Go home!’

b. [Pi] g [lam] hu sho’akad.
not IMP FR far cry

‘Don’t cry!’

c. * [lam] g [pi] ...

➢ This is not limited to a single word.

¹For reasons I do not understand, (16b) is only acceptable with ha, otherwise it is judged ungrammatical. Perhaps the reading induced by this placement of the negative is better with an intensifier.
(20) a. \[ \text{[Pi] koi} \] 'ant ha’icu huu.
not AUX:1S:PF something eat(PF)
not ‘I haven’t eaten yet.’
b. \[ \text{[Pi] koi} \] sha’i ha koi.
not AUX:1S:PF not a.bit at.all sleep(PF)
not ‘I have not fallen asleep yet.’

> A purely phonological explanation is not appropriate, because some pairs are not good pre-aux combinations. \( pi \) and \( mu’ \) cannot accompany each other there, even though both are acceptable pre-auxiliary elements.

(21) a. \[ \text{[Pi]} \text{[mu’i]} \] si shel gook ’o’ohan ha= nolav.
not AUX:1S much very often two PL,book 3P= buy
not ‘I don’t buy two books very often.’ (= 9a)
b. * \[ \text{[Pi]} \text{[mu’i]} \] ta’in si shel gook ’o’ohan ha= nolav.
c. \[ \text{[Mu]} \text{[mu’i]} \] ’ant ha= nolav heg ’o’ohanakud:.
much AUX:1S:PF 3P= buy DET PL,book
‘I bought lots of books.’

3.4 Verbs and Class 2

> It was noted earlier that verbs can appear before the auxiliary.

> This is only possible when there are no Class 2 elements otherwise available to fill the pre-auxiliary slot.

(22) a. \[ \sqrt{\text{[Pi]} \text{[atp]}} \] ‘i daha.
not AUX:PF:PROB LOC jump
‘He didn’t jumped.’
b. ‘i daha ‘atp.
c. * ‘i daha ‘atp [pi]

4 Towards a Theory of Pima Clause Structure

4.1 Structure Type?

> All the evidence presented above can be made compatible with either hierarchical or flat structure.
If the structure is flat, then there must be many linear precedence rules. These would get complex very quickly. E.g.,

1. pi: \{pi,AUX\}, \{pi,koi\}, \{pi,mu’i\}, \{pi,o\}, \{pi,sha\}, \{pi,VERB\}
2. koi: \{koi,AUX\}, \{pi,koi\}, \{koi,VERB\}
3. mu’i: \{mu’i,AUX\}, \{mu’i,VERB\}
4. o: \{AUX,o\}, \{o,sha\}, \{o,VERB\}
5. sha: \{AUX,sha\}, \{pi,sha\}, \{sha,VERB\}

Clearly, this is missing the generalizations I tried to capture by invoking three classes.

In the Tohono circularity case, all three legitimate orders would have to be specified independently, missing the generalization the circle captured.

So what about specifying orders over generalized class in addition to within the class:

1. Class 1: \{AUX,CLASS 1\}, \{CLASS 1,VERB\}
2. Class 2: \{AUX,CLASS 2\}, \{Class 2,VERB\}
3. Class 3: \{AUX,CLASS 3\}, \{CLASS 3,VERB\}

This doesn’t help with cases like *pi koi AUX* but *pi mu’i AUX*, since all elements are in the same class. It still doesn’t help with the Tohono circularity case, which involves two different classes.

Solution: Use hierarchical structure

4.2 Class 1 = Heads

- Recall: Class 1 elements are struck between the auxiliary and the verb.
- If they are heads, then alternative orders are blocked by the Head Movement Constraint.
- The HMC also accounts the strict ordering.

4.3 Class 2 = (Functional) Phrases

- Recall: Class 2 elements can move past the auxiliary.
- Recall: Class 2 elements can be on either side of the Class 1 elements.
- These facts suggest that Class 2 elements are XPs.
- Why are there superiority-like effects? Relativized Minimality + satisfaction of a semantically vacuous movement requirement (e.g., EPP)?
- Why can’t verbs cross Class 2? Verb raising only as a Last Resort?

4.4 Class 3 = (Lexical) Phrases

- Recall: Class 3 elements can go in front of the auxiliary.
- Recall: Class 3 elements can be on either side of Class 1 elements.
- These facts suggest that Class 3 elements are XPs.
- What is the difference between Class 2 and Class 3? Lexical Phrases move for information structure purposes (e.g., topic, focus, etc.).
4.5 Some Consequences

➤ Assume that there is a fixed order of projections in the clause.

➤ The variable ordering of pi ‘not’, and o irrealis and sha counterfactual cannot be (exclusively) due to Head Movement. The HMC would only allow one head to move past. (See Bobaljik (1999) for discussion of a similar pattern in Italian.)

(23)

\[ X' \]

\[ X \quad \text{NEG} \]

\[ \text{pi} \quad \text{NEG'} \]

\[ \text{NEG} \quad \text{IRRP} \]

\[ \text{IRR} \quad \text{CNTRP} \]

\[ \text{o} \quad \text{CNTR} \quad \text{VP} \]

\[ \text{sha} \quad \text{V} \]

➤ At minimum, then, Negation must start off below Irrealis in Pima.

➤ If these orders are the result of XP movement, then there needs to be some additional mechanisms to allow for the superiority-like effects: Tuck-in Movement, Repair-Driven Movement, Automagical W-Heads, etc.

(24) Gook ‘o’ odham ‘ash cum pi ’am hu vo \(t_p\) \(v_\text{am}\) \(v_\text{hu}\) fei.

‘Two people aren’t supposed to sing.’

➤ The Pima copula turns out to be an XP.\(^5\)

(25) D o ha= nukudas heg John.

‘John was their patient.’

4.6 Some Problems

➤ As always, the biggest problem is empirical accuracy.

➤ Sometimes, elements of the same class do occur in reverse orders. The two Class 2 elements in (26 = (6)) can occur in either order.

(26) John ‘ash cum \[\text{ga’i}\] gook ‘o’ ohan o ha= fei.

‘John is only supposed to read two books.’

\(^5\)Baker (2002) mentions, non-verbal copulas are common in the world, but he still thinks of them as heads.
The semantic relations between particles/adverbs appear to be expressed over quite large distances. Sometimes it looks like c-command rather than direct selection is at work.

In the sentences below (= 15), *si*, *shel*, and *gook ’o”ohan* are all assumed to be XPs in specifier positions. This means there must be a projection between *si* and *shel*, despite the fact that the former appears to be modifying the latter.

(27) a. Pi ’añi mu’i [si shel] gook ’o”ohan ha= nolav.
   not AUX:1S much very often two PL,book 3P= buy
   ‘I don’t buy two books very often.’ (= 9a)
   b. √Pi ’añi mu’i [si] gook ’o”ohan [shel] ha= nolav.

5 Speculations

There are a few ideas that have come to mind while working on this.

Stipulated orders/hierarchies are theoretically unsatisfying. They should be derived from “first principles”.

Inspired by work on the Athapaskan languages by Rice (2000), I speculate that particle order can derived from the following:

(28) The ordering of particles is due to scope or compositionality. Order can vary when
   1. the particles are not scopally or compositionally related; or
   2. the scope of particles is reversible.

(29) If X scopes over Y, X precedes Y.

(30a) is a sentence about intent to not leave, while (30b) is about there not being intent to leave.6

(30) a. Juan at [cum] [pi] o hii tako.
   Juan AUX:PF should not IRR go(PF) yesterday
   ‘Juan didn’t want to leave yesterday.’
   Juan AUX:PF not IRR should go(PF) yesterday
   ‘Juan wasn’t supposed to go yesterday.’

If this is on the right track, it questions the need for strict underlying orders.

There is still much to be done.

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6 *Cum* is a complicated particle, which deserves further work. See Hale (1969) for discussion.
References


