

ALLOMORPHY AND K'ICHEE' PROSODIC STRUCTURE

Robert Henderson

1 INTRODUCTION

- K'ichee' has 3 classes of allomorphic variation triggered by a certain prosodic boundary. One especially salient case is the appearance of status suffixes.¹

- (1) a. X-in-kos-**ik** r-umal x-in-chakun-ik.
CPL-A1s-get.tired-SC E3s-because CPL-A1s-work-SC
I was tired because I worked.²
- b. X-in-kos r-umal nu-chaak.
CPL-A1s-get.tired-SC E3s-because E1s-work
I was tired because of my work.

- Using this allomorphic variation as a diagnostic, I will show the distribution of the relevant boundary.
- I will propose that the boundary is the intonational phrase (IP), and then use the distributional data as a test case for some current theories of the syntax-phonology interface at the IP level.

1.1 Diagnostics

- Verbal status suffixes only appear phrase finally.

- (2) a. X-Ø-u-tij-**o**
CPL-A3s-E3s-eat-SC
He ate it.
- b. X-Ø-u-tij le wah.
CPL-A3s-E3s-eat the tortilla
He ate the tortilla.

- CVC clitics only appear in their full form phrase finally; otherwise they are CV.

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²A=Absolute, E=ergative, CPL=completive, ICPL=incompletive, SC=status suffix

- (3) a. Na x-Ø-u-tij **taj**.
 NEG CPL-A3s-E3s-eat IRR
 He didn't eat it.
- b. Na x-Ø-u-tij **ta** le wah.
 NEG CPL-A3s-E3s-eat IRR le wah
 He didn't eat the tortilla.

- Certain long vowels are only long phrase finally.

- (4) a. X-Ø-u-maltyox-**ijj**.
 CPL-A3s-E3s-thank-TR
 He thanked him.
- b. X-Ø-u-maltyox-**ij** le alah.
 CPL-A3s-E3s-thank-TR the boy
 He thanked the boy.

- I will be using these tests interchangeably since my fieldwork shows that they are sensitive to the same triggers wherever testable.

2 THE BOUNDARY AND ITS DISTRIBUTION

- The basic generalization is that we see a boundary utterance finally and at the left and right edges of every tensed clause.
- More formally, I think we can identify full tensed clauses as CPs and say that we must have this boundary at the right and left edges of every CP.

Triggering allomorphy

- We see status suffixes and full CVC clitics when the next constituent contains a full tensed clause.

(5) verb || finite complement

- a. X-Ø-inw-il-**o** chi x-Ø-wa' ri ala.
 CPL-A3s-E1s-see-SC that CPL-A3s-eat the boy.
 I saw that the boy ate.
- b. *X-Ø-inw-il chi x-Ø-wa' ri ala.
 CPL-A3s-E1s-see that CPL-A3s-eat the boy.
 I saw that the boy ate.

(6) verb || headless relative

- a. X-Ø-in-chap-**o** su x-Ø-u-loq'-o.
 CPL-A3s-E1s-grab-SC what CPL-A3s-E3s-bought-SC
 I grabbed what he bought.

- b. *X-Ø-in-chap su x-Ø-u-loq'-o.
 CPL-A3s-E1s-grab what CPL-A3s-E3s-bought-SC
 I grabed what he bought.

(7) verb || clausal adjunct

- a. X-at-inw-il-ø are chi x-at-ul-ik.
 CPL-A2s-E1s-see-SC when CPL-A2s-arrive-SC.
 I saw you when you arrived.
- b. *X-at-inw-il are chi x-at-ul-ik.
 CPL-A2s-E1s-see when CPL-A2s-arrive-SC.
 I saw you when you arrived.

Blocking allomorphy

- If the next constituent does not contain a full tensed clause, then we lose the boundaries.

(8) verb + nonfinite complement

- a. X-Ø-ki-k'is toj-on-ik.
 CPL-A3s-E3s-finish pay-AP-INF
 They finished paying.
- b. *X-Ø-ki-k'is-ø toj-on-ik.
 CPL-A3s-E3s-finish-SC pay-AP-INF
 They finished paying.

(9) verb + relative clause

- a. X-Ø-u-chap ri b'ah ri x-Ø-u-tij qa-kinaq.
 CPL-A3s-E3s-catch the gofer the CPL-A3s-E3s-eat E1p-beans
 He caught the gofer that ate our beans.
- b. *X-Ø-u-chap-ø ri b'ah ri x-Ø-u-tij qa-kinaq.
 CPL-A3s-E3s-catch-SC the gofer the CPL-A3s-E3s-eat E1p-beans
 He caught the gofer that ate our beans.

(10) verb + light headed relative

- a. X-Ø-inw-il ri x-Ø-u-loq' pa k'ayb'al.
 CPL-A3s-E1s-see the CPL-A3s-E3s-buy at market
 I saw saw the thing he bought at the market.
- b. *X-Ø-inw-il-ø ri x-Ø-u-loq' pa k'ayb'al.
 CPL-A3s-E1s-see-SC the CPL-A3s-E3s-buy at market
 I saw saw the thing he bought at the market.

- (11) verb + adjunct
- a. x-Ø-kos r-umal u-chak.
CPL-A3s-tire E3s-because E3s-work
He was tired because of his work.
- b. *x-Ø-kos-ik r-umal u-chak.
CPL-A3s-tire-SC E3s-because E3s-work
He was tired because of his work.

Futher considerations

- The last two examples show that inserted a boundary at the left edge of full tensed clauses is not a fact about heaviness.

- (12) Verb + heavy NP
- a. x-Ø-ok le jun nimalaj k'amol b'e le'.
CPL-A3s-enter that a big leader there
That important leader there just entered.
- b. *x-Ø-ok-ik le jun nimalaj k'amol b'e le'.
CPL-A3s-enter-SC that a big leader there
That important leader there just entered.

- (13) verb + heavy adjunct
- a. x-in-ok r-uk' r-ach'il ru-tat ri a Lu'.
CPL-A3s-enter E3s-with E3s-friend E3s-father the CLF Lu'
I entered with Lu's father's friend.
- b. *x-in-ok-ik r-uk' r-ach'il ru-tat ri a Lu'.
CPL-A3s-enter-SC E3s-with E3s-friend E3s-father the CLF Lu'
I entered with Lu's father's friend.

- We can implicate the right edge of full tensed clauses because we see status suffixes at the end of relative clauses when material from the main clause follows.

- (14) a. X-Ø-inw-il-o ri alah ri k-Ø-u-tij-ø pa r-ochoch r-achi'l.
CPL-A3s-E1s-see-SC the boy that ICPL-A3s-E3s-eat-SC at E3s-house E3s-friend
I saw the boy [who ate it]at his friends house.
- b. X-Ø-inw-il-o ri alah ri k-Ø-u-tij pa r-ochoch r-achi'l.
CPL-A3s-E1s-see-SC the boy that ICPL-A3s-E3s-eat at E3s-house E3s-friend
I saw the boy [who ate it at his friends house].

- (15) a. Ri ja' ri x-Ø-in-tij-ø x-Ø-u-b'an k'ax chwe.
the water that CPL-A3s-E1s-eat-SC CPL-A3s-E3s-did sickness to me

The water that I drank made me sick.

- b. *Ri ja' ri x-Ø-in-tij x-Ø-u-b'an k'ax chwe.
the water that CPL-A3s-E1s-eat-SC CPL-A3s-E3s-did sickness to me
The water that I drank made me sick.

- We know that it's not the left edge of the VP triggering a boundary because we see CV clitics at this position.

- (16) a. Na iwir **ta** xinril le k'amol b'e.
NEG yesterday IRR CPL-A3s-E3s-see the leader
It wasn't yesterday that he saw the leader.
- b. *Na iwir **taj** xinril le k'amol b'e.
NEG yesterday IRR CPL-A3s-E3s-see the leader
It wasn't yesterday that he saw the leader.
- c. Na iwir **k'u** xinril le k'amol b'e.
NEG yesterday IRR CPL-A3s-E3s-see the leader
Was it yesterday that he saw the leader.
- d. *Na iwir **k'ut** xinril le k'amol b'e.
NEG yesterday IRR CPL-A3s-E3s-see the leader
Was it yesterday that he saw the leader.

- **Summary:** There is a prosodic boundary surrounding every CP in K'ichee'.

2.1 Intonational Phrases

- Now that we know the distribution of the relevant boundary, I want to try to identify it with IP.
- First, note that the domain we are talking about is quite large. We see it only at the edges of utterances, or what Selkirk (2005) would call CommaP, and at what would be the next smallest constituent possible, namely a full CP that doesn't happen to have its own illocutionary force.
- The second argument is that speakers feel that main prosodic difference between sentences like the following, is that the first contains a big pause and a rising contour anchored the final syllable verb, while the second doesn't. Big pauses and contour tones are hallmarks of intonational phrases.

- (17) a. X-in-kos-ik r-umal x-in-chakun-ik.
CPL-A1s-get.tired-SC E3s-because CPL-A1s-work-SC
I was tired because I worked.
- b. X-in-kos r-umal nu-chaak.
CPL-A1s-tire E3s-because E1s-work
I was tired because of my work.

- Finally, there appears to be a slightly smaller boundary that triggers another class of allomorphy that we might want to identify as a Major Phrase/Phonological Phrase.
- Our diagnostic is the [h] phoneme, which also only appears phrase finally.

- (18) a. X-Ø-u-tij le **wah**.
 CPL-A3s-E3s-eat the tortilla
 He ate it.
- b. *X-Ø-u-tij le **wah** le alah.
 CPL-A3s-E3s-eat the tortilla the boy
 The boy ate the tortilla.
- c. X-Ø-u-tij le **wa** le alah.
 CPL-A3s-E3s-eat the tortilla the boy
 The boy ate the tortilla.

- The [h] phoneme appears at all the boundaries induced by tensed clauses, but it also appears at smaller boundary that is presumable contained by the former.
- First, we can have the [h] before postverbal DPs and PPs if we insert a pause. This has some sort of information structure effect that I don't understand.

- (19) a. X-Ø-r-il le **b'a** le alah.
 CPL-A3s-E3s-see the gofer the boy
 The boy saw the gofer.
- b. X-Ø-r-il le **b'ah**, le alah.
 CPL-A3s-E3s-see the gofer the boy
 The boy saw the gofer.

- But this is absolutely impossible with the status suffixes, for instance. My speakers say the following sounds like a speech error, like if you use a pronoun that the hearer can't accomodate and you realize this at the last second and insert the full DP.

- (20) a. #X-Ø-r-ilo, le alah.
 CPL-A3s-E3s-see, the boy
 He saw it, the boy.

- Also, remember that directly preverbal clitics (even in focal negation) cannot appear in the CVC forms. This suggests that we do not get a big IP boundary here, yet we see the [h] phoneme in preposed topics and foci.

- (21) a. Le **alah** x-Ø-ok-ik
 The boy CPL-A3s-enter-SC
 The boy entered.

b. *Le **ala** x-Ø-ok-ik
 The boy CPL-A3s-enter-SC
 The boy entered.

(22) a. Are le **b'ah** x-Ø-ok-ik
 FOC the gofer CPL-A3s-enter-SC
 It was the gofer that entered.

b. *Are le **b'a** x-Ø-ok-ik
 FOC the gofer CPL-A3s-enter-SC
 It was the gofer that entered.

- Finally, we see the [h] phoneme showing up in the first conjuncts of conjunctions. It is bad if we have to say that each conjunct of a conjunction forms an IP.

(23) a. Le **alah** chi'l le alih x-e'-ul-ik
 the boy and the girl CPL-A3p-arrive-SC
 The boy and the girl arrived.

b. Le **ala** chi'l le alih x-e'-ul-ik
 the boy and the girl CPL-A3p-arrive-SC
 The boy and the girl arrived.

- **Summary:** We have good reason to identify the domain edge triggering status suffixes, CVC clitics, and certain long vowels as an intonational phrase. There also exists a smaller boundary that triggers [h] allomorphy.

2.2 Formal treatment

- Now we want to know what sort of syntax-phonology mapping will derive these two boundaries.
- I want to consider an alignment and a phase-based account.

2.3 Alignment

- Selkirk (1986, 1995) develops a theory of the syntax phonology interface where syntactic constituents of a certain type are aligned with the right/left edges of prosodic constituents of a certain type.
- MajP is universally taken to correspond to maximal projections of lexical categories.
- This immediately generates a problem because no matter how we align the R/L edges of XPs to the R/L edges of MajPs, we get a problem with postverbal subjects and objects, since in every case we predict a MajP between them.

(24) VOS
 a. (VO(S

- b. VO)S)
- c. VO(S(
- d.)V)O)S

- We saw that this is false. If we have a postverbal subject and object, final [h] does not appear on objects.

- (25) a. Xutz'et le b'a le alah ll.
 b. *Xutz'et le b'ah ll le alah ll.

- One way out of this conundrum is to align the left edges of XPs with the left edges of MajPs, but then have a constraint forcing the right edges of MajPs to align with the right edge of IPs. This works if we don't allow recursive major phrases.

- (26) (VO(S
 a. *(VO)(S)
 b. *(VO(S))
 c. (VOS)

- Although this would predict the right facts postverbally, there we get the opposite problem preverbally. We lose the boundary we want to keep, namely the one directly before the verb.

- (27) (S(VO
 a. *(S)(VO)
 b. *(S(VO))
 c. (SVO)

- Although we might be able to solve this problems with XP-alignment, we look to be in a difficult place.
- A second problem is the allomorphy triggering IP boundaries.
- Selkirk (2005) proposes that the interface constraint governing IP alignment crosslinguistically is *Align R/L (CommaP,IP)*.
- This won't work for K'ichee' since we get IP boundaries at the edge of every CP, whether or not it is a root CP or is "logically and compositionally independent of . . . the at-issue entailments (Potts, 2005, p.113)." Just take finite complement clauses, for example, which are clearly logically and compositionally part of the at-issue entailments.

- (28) a. X-Ø-in-tzij-o chi x-Ø-el-ik.
 CPL-A3s-E1s-say-SC that CPL-A3s-leave-SC
 I said that he left.

- To get alignment to work for IPs, you have to define your alignment constraints on CPs, which is bad for two reasons; we ideally don't align specific projections, and we especially don't align specific functional projections.

2.4 Phase-based

- A phase-based theory can account for the K'ichee' data, but it may die from the *too-many-stipulations problem*.
- Let's suppose, following Fox and Pesetsky (1995); Ishihara (2007), that *c* and *v* are phases that spell out the entire *vP* and *CP*.
- If *vP* spells out a major phrase, then we get what we want; all postverbal material, including VP adjuncts are in the same phase. Preverbal subjects, though, will abut the MajP boundary triggering final [h].

(29) a. (MajP[*vP* xutij le b'a le alah])
 b. [*XP* Le alah₁ (MajP[*vP* xutij le b'ah t₁])]

- If we then align MajP boundaries to the left edges of topicalized/focused constituents, then we correctly predict that we should get a boundary between TOP and FOC.

(30) [*TopP* Le alah₂ [*FocP*(MajP Are le b'ah₁)(MajP[*vP* xutij t₁ t₂])]]

- This also gets us the boundary before right extraposed verbal arguments. Presumably they move out of *vP*. Since they have some effect on the information structure, let's assume our alignment constraint kicks in. Then:

(31) [*XP*(MajP[*vP* xutij le b'ah t₁])(MajP le alah₁)]

- Finally, we have to deal with K'ichee' IPs. Since it really looks like we get IP boundaries on the right and left edges of every single CP in K'ichee', let's say that while *vP* spells out a major phrase, *CP* spells out IPs.
- This gets us all the IP data, but introduces a new problem. When we have *CP* complements, since the complement is a *CP*, it spells out an IP, yet it is inside a *vP*, which spells out a MajP. This means that we would have to have IPs inside of MajP, unless we do some prosodic restructuring.

2.5 Summary

- The phase-based account might have an upper leg if we can identify the spellout domain as the entire *vP* and *CP*. Ideally we would want some good language internal syntactic arguments for this.
- Kratzer and Selkirk (2007) claim that CPs also spellout major phrases. K'ichee' seems to require that we allow different phases to spell out different prosodic constituents.
- We need a story about prosodic restructuring that will allow an CP=IP inside a vP=MajP to be phrased outside of the containing major phrase. Presumably this could happen in the OT phonology layer of the grammar that comes after spellout.

3 CONCLUSION

- There is evidence in Kaqchikel from allomorphy for two layers of prosodic structure, MajP and IP.
- IPs boundaries are required on the right and left boundaries of every CP. This poses trouble for CommaP theories of intonational phrases.
- Although any theory of the syntax-phonology interface in K'ichee' will require some work, a phase-based theory looks more promising than an alignment account.
- In the future I want to return to the diagnostics to try to understand how they arise. The central insight is that K'ichee' requires the heads of prosodic constituents to be aligned rightmost, which drives allomorphy through constraints on optimal stress placement. For example, we might need CVC clitics phrase finally so we can put the head of IP adjacent to IP; phrase medially we are free to choose the non-stress-bearing CV form.

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