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The Acquisition of Finiteness in K'iche' Maya

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K'iche' is a Mayan language with over a million speakers living in the western highland region of Guatemala. I recorded language samples from three children learning K'iche' over a nine-month period in 1978. In the intervening decades I have published several reports on the acquisition of K'iche' (c.f. Pye 1983, 1992). In this report I offer a few observations on the children's acquisition of the language's verbal morphology and its implications for the acquisition of finiteness.

K'iche' verbs have a more complex inflectional morphology than most languages. I provide an inflectional template for K'iche' verbs in (1). As (1) indicates, K'iche' employs an ergative agreement system. I outline the differences between ergative and accusative agreement systems in (2). Ergative languages use ergative morphemes to mark the subjects of transitive verbs and absolutive morphemes to mark the subjects of intransitive verbs (see Pye 1990 for details on the acquisition of ergative agreement morphology). I list the K'iche' inflections for aspect and agreement in (3) and (4). I provide examples of K'iche' verbs in (5).

(1) K'iche' verb template

aspect + Absolutive (+ movement) + (Ergative) + stem (+ derivation)
(+ termination)

(2) Ergative and Accusative agreement paradigms

Ergative		Accusative	
Transitive Subject	Ergative	Transitive Subject	Nominative
Intransitive Subject	Absolutive	Intransitive Subject	Nominative
Transitive Object	Absolutive	Transitive Object	Accusative

(3) K'iche' aspect prefixes

k-	incompletive
x-	completive
ch-	imperative/irrealis
∅-	perfect

(4) K'iche' agreement prefixes

Person	Ergative		Absolutive
	pre-vocalic	pre-consonantal	
1	inw-	in-	in-
2	aw-	a-	at-
3	r-	u-	∅-

(5) Examples of K'iche' verbs

a. kawaʔik	b. xintijoh
k-∅-waʔ-ik	x-∅-in-tij-oh
ASP-3A-eat-TERM	ASP-3A-1E-eat-TERM
'S/he is eating.'	'I ate it.'

The abbreviation TERM in these examples stands for the verb termination affix. The termination affixes simultaneously register verb transitivity, aspect, and the derivational status of the verb stem. The examples in (6) show how these terminations surface in various moods.

(6) Examples of K'iche' verb terminations

a. waʔinaq 'S/he has eaten'	b. intijo:m 'I have eaten it'
c. chatwaʔoq 'Eat!'	d. chatijaʔ 'Eat something!'

The termination suffixes are not used when the verb occurs in the middle of a phonological phrase (see the examples in 7).

(7) K'iche' verbs in phrase-medial position

a. kawaʔ taj	b. xintij k'ut
k-∅-waʔ taj	x-∅-in-tij k'ut
ASP-3A-eat NEG	ASP-3A-1E-eat EMPH
'S/he is not eating.'	'I did eat it!'

The example in (7a) also demonstrates that the negation marker follows the verb. Negation in K'iche' is similar to negation in French in that the main negative particle follows the finite verb form. An optional, secondary negation marker

precedes the verb. I shall assume a standard syntactic tree for K'iche' with the verb originating in a position below the NEG phrase and moving past the NEG phrase to check agreement and aspect. Finiteness is thus marked in K'iche' by the combination of aspect and agreement prefixes as well as the termination suffixes. All verbs in negative contexts are presumed to be finite.

We can now ask what predictions the Optional Infinitive Hypothesis (Wexler 1995) makes for the acquisition of the aspect and agreement inflections in K'iche'. We face several difficulties at this juncture that I believe demonstrate the degree to which the OI Hypothesis requires further definition. I will assume that OI applies to the acquisition of aspect since this assumption strengthens the hypothesis by extending it to a larger inflectional domain. I also assume that the hypothesis applies to the acquisition of ergative agreement markers for the same reason (Pye 1990). The phenomenon of split ergativity provides evidence for this assumption (Dixon 1979). Languages with ergative splits exhibit an ergative agreement system in part of their verb paradigm and an accusative agreement system in the other part. Within the Mayan language family, Yucatec has a split ergative system based on aspect (see 8).

(8) Ergative Splits in Yucatec and Jacaltec

Yucatec		Jacaltec	
Completive	Incompletive	Root Clause	Subordinate Clause
Ergative	Accusative	Ergative	Accusative

Yucatec uses ergative agreement for verbs in the completive aspect and accusative agreement for verbs in the incompletive aspect. Jacaltec splits agreement by clause type. Root clauses in Jacaltec have ergative agreement while subordinate clauses follow an accusative agreement pattern (Larsen & Norman 1979). These patterns of split ergativity demonstrate that ergative morphology must have access to information about aspect and clause structure. This can only come about if aspect and agreement are checked syntactically. Unlike other Mayan languages, K'iche' preserves an ergative agreement morphology throughout changes in person, aspect and clause type.

The third issue that remains to be settled is the form of the nonfinite verb in K'iche'. While European languages commonly require a distinct verbal morphology in subordinate clauses, K'iche' uses the same inflectional morphology on verbs in subordinate and main clauses (see the examples in 9).

(9) Examples of subordinate clauses in K'iche'

- | | | | |
|----------------|-----------------|---------------|------------------|
| a. k-in-tajin | k-in-waʔ-ik | b. k-in-kowin | k-in-ʔetz'an-ik |
| ASP-1A-PROG | ASP-1A-eat-TERM | ASP-1A-can | ASP-1A-play-TERM |
| 'I am eating.' | | 'I can play.' | |

- c. k- \emptyset -inw-a:j k-at-in-q'al-u:j
 ASP-3A-1E-want ASP-2A-1E-hug-TERM
 'I want to hug you.'

These examples demonstrate another important respect in which the OI Hypothesis remains undefined. In his original statement of the hypothesis Wexler (1994:311) claims that there is an early "optional infinitive" stage in which finite and non-finite forms are in free variation, and the finite forms have moved to their correct position. Languages like K'iche' offer an interesting test of the hypothesis since the adult language does not give children the option of using nonfinite verb forms. We should find that K'iche' children skip the optional infinitive stage and produce verbs inflected appropriately for aspect and agreement.

Wexler (1996) extended the OI hypothesis to account for the variable appearance of copular verbs in the sentences of children learning English. Wexler claims that the English copula only serves to mark tense in sentences that lack a full verb. Therefore, it should only appear optionally in children's utterances. I would make this prediction more precise and argue that children should use the copula in the same proportion of obligatory contexts as they use finite verb forms. One of the shortcomings of the OI Hypothesis to date is the lack of a precise prediction about the frequency with which children would use the copula and infinitive verb forms. A child with one instance of a root infinitive form would support the hypothesis to the same extent as a child with a hundred root infinitives. Although K'iche' lacks a true copula, it does have an all-purpose verb that indicates the existence, location or possession of an entity. I provide examples of this verb in (10).

(10) Examples of the K'iche' positional verb *k'oolik*

- | | |
|--------------------------|------------------------------|
| a. k'oo juun ʔetz'ab'aal | b. k'oo pa lee mes lee tz'iʔ |
| exist one/a toy | exist on the table the dog |
| 'There is a toy.' | 'The dog is on the table.' |

Technically, *k'oolik* belongs to the positional lexical class in K'iche' since it bears a positional suffix /-l/ that distinguishes this lexical class from other inflectional classes in K'iche'. Positional lexical classes are fairly common in Mesoamerican languages. The K'iche' positional verb *k'oolik* has a range of use that overlaps the English copula to a considerable degree. It even appears without overt aspect and agreement inflections, indications of its pleonistic status in the language.

Between 1978 and 1980 I recorded longitudinal samples of three children learning K'iche'. I provide an overview of these samples in (11).

(11) Ages, MLUs and number of utterances for the K'iche' language samples.

Sample	Al Tiyaan			Al Chaay			A Carlos		
	age	MLU	number of utterances	age	MLU	number of utterances	age	MLU	number of utterances
1-3	2;1.17	1.2	732	2;9.8	1.6	945	3;1.5	1.8	735
4-6	2;2.6	1.4	1069	2;10.6	2.1	1348	3;1.25	2.4	963
7-9	2;3.19	1.8	1155	2;10.27	2.2	1160	3;4.2	2.8	1760
10-12	2;7.21	2.1	844	3;0.16	2.7	1197	3;4.23	2.8	1272
13-15	2;10.5	2.8	1026	3;1.5	2.7	1159	3;6.26	3.1	1333
16-18				3;2.28	3.0	1103	3;8.5	3.3	1508
19-21				3;4.10	3.2	794			

I provide examples of the sorts of sentences that K'iche' children produce when they are beginning to speak in (12). All three of these children regularly produced verbs that omitted the aspect and agreement prefixes. Tables (13) and (14) provide the percentage presence of the aspect and agreement inflections in their obligatory contexts. It takes many months for K'iche' children to regularly produce the full aspectual and agreement morphology on their verbs. Obviously, the K'iche' data do not support Wexler's original version of the OI hypothesis.

(12) Examples of K'iche' children's verbs.

a. Al Tiyaan (2;1.17)
 kay li liʔ, kaʔ.
 = kakay ri ri.
 k-0/kay ri ri.
 ASP-3A/look this this.
 'Look at this!'

b. Al Chaay (2;9.8)
 nan, loq' ech wa?
 = naan, kaqaloq' qeech wa
 naan k-0-qa/loq' q-ee-ch wa
 mama ASP-3A-4E/buy 4E-our-TERM EMPH
 'Mama let's buy our own'

c. A Carlos (3;1.5)
 la le: luʔ, la lok'owik
 = le areʔ a luʔ xloq'owik
 le areʔ a luʔ x-0/loq'-ow-ik

the him FAM Pedro ASP-3A/buy-AP-TERM
 'It was Pedro that bought it'

(13) Incompletive, Completive and Imperative aspect marking on K'iche' verbs
 (percent use in obligatory contexts)

Sample	Al Tiyaan			Al Chaay			A Carlos		
	Inc	Comp	Imp	Inc	Comp	Imp	Inc	Comp	Imp
1-3	0	0	0	2	2	10	24	8	14
4-6	2	0	25	3	10	6	16	11	11
7-9	11	4	0	1	10	8	20	19	4
10-12	27	12	0	6	0	6	19	14	2
13-15	11	19	3	12	12	2	16	24	2
16-18				35	20	0	63	65	16

Inc = Incompletive; Comp = Completive; Imp = Imperative

(14) First, second and third person singular agreement marking on K'iche' verbs
 (percent use in obligatory contexts)

Sample	Al Tiya:n			Al Cha:y			A Carlos		
	1	2	3	1	2	3	1	2	3
1-3	33	25	-	-	2	-	37	27	18
4-6	12	23	-	-	9	6	49	54	38
7-9	10	17	20	9	5	4	40	44	42
10-12	13	8	33	3	4	28	52	55	44
13-15	22	20	30	8	16	21	55	48	80
16-18				34	20	36	71	69	75

Negative contexts provide a critical context for the OI hypothesis since there is overt evidence that the verb has moved from its underlying position. I provide examples of the K'iche' children's negative sentences in (15). We find that the K'iche' children were no more inclined to use finite verb forms in negative contexts than in affirmative sentences. An inspection of the children's negative sentences suggests that K'iche' children may be even less inclined to inflect their verbs for aspect in negative sentences than in affirmative sentences. The evidence from negative sentences in children's K'iche' is decidedly against OI. This observation is strengthened by the finding that the K'iche' children never fail to move the verb past the negation marker. They may omit the verb entirely, but where they supply some form of the verb in negative sentences, the verb always precedes the negative marker. We, thus, have evidence in K'iche' that the children obey all of the constraints on verb movement except for the production of aspect and agreement inflections on verbs in raised positions.

(15) Examples of K'iche' children's negative sentences

- a. Al Tiyaan (2;1.22)
 taj, taj, chap taj
 = taj, taj, kachap taj
 taj, taj, k-θ-a/chap taj
 NEG, NEG, ASP-3A-2E/touch NEG
 'Don't touch it'
- b. Al Chaay (2;9.3)
 no, koj taj in
 = no, xinkoj taj in
 no, x-θ-in/koj taj in
 no, ASP-3A-1E/use NEG 1A
 'No, I didn't use it'
- c. A Carlos (3;1.10)
 le', ah, asutin ta chik
 = le, ah, kasutin ta chik
 le, ah, k-θ/sutin ta chi-k
 There, uh, ASP-3A/turn NEG more-TERM
 'There, uh, it's not turning any more'

I provide data on the children's use of the positional verb *k'oolik* in (16). Here, too, we find that it takes many months before K'iche' children supply the positional verb in its obligatory contexts. Since the OI Hypothesis predicts that K'iche' children should always use fully inflected verbs, the optional use of *k'oolik* is a problem.

(16) Use of the positional verb *k'oolik* (number and percent use in obligatory contexts)

Sample	Al Tiyaan		Al Chaay		A Carlos	
	no.	percent	no.	percent	no.	percent
1-3	27	30%	54	7%	71	73%
4-6	41	32%	61	28%	64	76%
7-9	64	48%	33	27%	306	90%
10-12	68	88%	97	52%	142	94%
13-15	99	88%	98	76%		
16-18			133	89%		

A further problem arises for OI if we compare the percentage use of *k'oolik* with the percentage use of the aspect and agreement markers from (13) and (14). In the last sample period Al Tiyaan, Al Chaay and A Carlos supply the complete

aspect marker in 19, 20 and 65 percent of its obligatory contexts. These numbers are well below the percentages with which they supplied the positional verb *k'oolik*. I conclude that the data for *k'oolik* does not support the OI Hypothesis. Either the children are adding *k'oolik* and the verb inflections separately, or some additional factor delays the production of the verb inflections.

The acquisition data from K'iche' disappoints all three OI predictions that I tested for K'iche'. K'iche' children do not begin with fully inflected finite verbs, they are not especially inclined to use finite verbs in negative contexts, and they do not omit the positional verb *k'oolik* with the same frequency that they omit the aspect and agreement markers. I conclude that the OI Hypothesis only describes the acquisition of verb morphology for a limited set of languages. The hypothesis remains descriptive rather than explanatory to the extent that it lacks a principled means of predicting which languages it will apply to.

David Poeppel (1996), proposed changing the definition of OI to predict that children acquiring any language will first use an inflectional default form of the verb. The infinitive serves this role in European languages while a stem form of the verb serves this purpose in languages that lack infinitives. Poeppel made this proposal to account for the verbs that children first produce when acquiring the Inuktitut language spoken in northern Canada. Children learning Inuktitut will sometimes omit suffixes at the end of the verb while retaining the verb root and several verbal suffixes (Crago & Allen 1996). The use of uninflected stems would also account for the English data.

A glance at the examples of the children's utterances in (12) and (15) finds support for Poeppel's conjecture. K'iche' children produce verb stems that lack the aspectual and agreement inflections that adult speakers use. I should mention that data for two other Mayan languages, Tzeltal (Brown 1996) and Tzotzil (de León 1999), show that children acquiring those languages also produce uninflected verb stems. However K'iche' children produce verb forms that do not support Poeppel's conjecture, such as those in (17).

(17) Children's productions of K'iche' verb terminations

a. Al Tiyaan (2;1.17)

ʔik.

= kawaʔik.

k-0/waʔ-ik.

ASP-3A/eat-TERM

'It eats.'

b. Al Chaay (2;9.8)

wik'.

= kanikowik

k-0/nik-ow-ik

ASP-3A/shine-Antipassive-TERM

'It shines.'

- c. A Carlos (3;1.5)
ma ju wach e
= chak'ama jun uwach e
ch-0-a/k'am-a jun u-wach e
ASP-3A-2E/bring-TERM one 3E-eye there
'Bring one there.'

These examples demonstrate the special character of the K'iche' grammatical system—the termination inflections. K'iche' children commonly produce just the last syllable of the verb. If this syllable contains the verb stem then the production supports Poeppel's conjecture. Unfortunately, K'iche' children are just as likely to produce verb forms which omit part or all of the verb stem.

The children's use of the positional verb *k'oolik* underlines the significance of this observation. *K'oolik* has the morphological structure shown in (18). The positional affix is required for all words that belong to the class of positionals in K'iche'. Positional verbs also require the intransitive termination affix. The discourse context makes it easy to spot when the children omit *k'o:lik* in an obligatory context. I provide examples of the children's productions in (19). Children, who produce *k'o:lik* as /-lik/ have omitted the root entirely and are just producing the inflectional suffixes. (20) shows the number of times the children produced different forms of the positional *k'oolik* in clause-medial and clause-final positions (cf. Pye 1992).

(18) The morphological structure of the positional verb *k'oolik*

k'oo-l-ik
exist-Positional_Affix-TERM
'It exists'

(19) Children's use of the positional verb *k'oolik*

- a. Al Tiyaan (2;1.17)
lik e chut'.
= k'oo le: xut'.
/k'oo-l-ik e xut'.
/exist-POS-TERM the ass.
'It has an ass.'
- b. Al Chaay (2;9.8)
naan, lik mux le.
= naan, k'oo mux le.
naan /k'oo-l-ik mux le

mama /exist-POS-TERM swimming there
 ‘Mama, there is swimming there’

(20) Forms of *k’oolik* in the children’s early language samples (number of tokens)

	Clause-medial			Clause-final		
	∅	k’oo	lik	k’oo	lik	k’oolik
Al Tiyaan	26	12	2	0	20	7
Al Chaay	65	16	6	0	16	6
A Carlos13	30	0		0	8	30

Al Tiyaan and Al Chaay actually produce this positional as *lik* more frequently than the full form *k’oolik* in clause-final contexts. The oldest child, A Carlos, still produced the positional as *lik* in some clause-final contexts. It is also interesting to note that Al Tiyaan and Al Chaay overgeneralized the production of the clause-final form to the clause-medial position. Poeppel’s conjecture does not predict this overgeneralization.

The K’iche’ children’s use of the verb terminations demonstrates yet another respect in which the OI hypothesis remains undefined. Wexler’s original hypothesis, and Poeppel’s extension of it, assume that children will always produce verb stems whether or not they add any verbal inflections. This assumption derives from Brown’s original description of inflectional development in English (1973). Most descriptions of inflectional development since then have incorporated some form of Brown’s distinction between lexical and functional morphemes. The early appearance and productive use of verb terminations in the speech of K’iche’ children indicate that children are not only aware of functional categories, but may use functional inflections from the beginning.

I draw two general conclusions from my study. The first is that there are at least three distinct acquisition patterns for verb morphology. The first pattern is described by the OI Hypothesis and applies to languages like German and possibly Spanish. The second pattern features the optional use of verb stems and applies in Chinese (Erbaugh 1978), Inuktitut, Tzotzil, Tzeltal and English. The third pattern features the productive use of verb morphology and applies in K’iche’, Polish (Weist et al. 1984), Turkish (Aksu-Koç 1986), Yucatec (Pfieler & Briceño 1997) and probably Navajo. The existence of these three patterns exposes a fundamental flaw in the OI Hypothesis. The unique feature of the hypothesis is the assumption that children fail to specify an abstract syntactic feature such as tense rather than simply failing to add the requisite inflections to their verbs. The difficulty is that the OI Hypothesis does not provide an explanation of why children would fail to add just this feature to their early grammar. Without an explanation for this precise deficit, the hypothesis is free to apply where it fits the data and free from applying where it does not. We lack a

theory that sets out all possible acquisition patterns in advance. We do not even know if there are other possibilities.

My second conclusion is that current theories of language acquisition remain seriously undefined due to the unavailability of cross-linguistic data. The K'iche' data demonstrate the degree to which a theory such as the Optional Infinitive Hypothesis can appear to be fully specified as long as we restrict our attention to English and other European languages. Once we extend acquisition theories beyond this narrow set of languages serious deficiencies in our theoretical constructs become all too obvious. Until acquisition data are available for a reasonable sample of typologically distinct languages, we must assume that all linguistic theories are undefined in fundamental respects. We should immediately decide what would constitute a scientifically valid sample of the world's languages and document their acquisition while there are still children who use them. Fifty percent of the world's 6,000 languages will go extinct in the next century, which alone shows that children are no longer acquiring these languages (Krauss 1992). With a valid database in place we would finally be in a position to offer serious conjectures about acquisition universals.

Endnotes

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