

Notes on Bohnemeyer (2002)

The Grammar of Time Reference in Yukatek Maya

1. A DASH OF YUKATEK MAYA GRAMMAR

1.0 *Linguistic type*

Head-initial, head-marking, rich inflection, a few derivational affixes

1.1 *Stative inflection*

Stative predicates, and stative markers (see Sec. 1.3) inflect for *agreement* only, as in (1). (See also stative clauses in the text: §1.1, §5.2.)

(1) K'oha'n-en

ill-B.1.SG (JB)
ill-1s (MB)
'I am ill.'

1.2 *Verbal inflection*

(V) *JB*: Verbs inflect for *status* (completive, incomplete, subjunctive, imperative, extrafocal)

	<u>CMP</u>	<u>INC</u>	<u>SUBJ</u>	<u>IMP</u>	<u>EXTRAFOC</u>
• <u>Active IV</u>	-nah	-∅	-nak	-nen	-nah-ik
e.g., <i>áalkab</i> 'run' and other unergatives					
• <u>Inactive IV</u>	-∅	-Vl	-Vk	-en	-ik
e.g., <i>kim</i> 'die' and other unaccusatives					
• <u>Inchoative IV</u>	-chah	-tal	-chahak	n.a.	-chah-ik
'Inchoative stems are without exception derived from stative roots.' (p. 170)					
• <u>Positional IV</u>	-lah	-tal	-l(ah)ak	-len	-lah-ik
Most have ambiguous category (positional or transitive), e.g. <i>mech</i> 'curl up'					

Any TV-root, e.g., *ch'ak* 'cut', can be inflected as either active or 'passive':

• <u>Active TV</u>	-ah	-ik	-∅/eh	∅/eh	-ah-il
• <u>Passive TV</u>	\/-Vb/-a'b	\/-al/-a'l	\/-Vk/-a'k	n.a.	\/-ik/-a'b-ik

(V') *MB*: Verbs inflect for *mood* (indicative, elaborating, or imperative), *aspect* (begun, done) & *centering* (agent-centered IV or TV, undergoer-centered IV or TV).

Derivational suffixes: *-chah* (st\iv_v) 'become', *-lah* (st\iv_v) 'result state'

	<u>IND</u>	<u>ELA</u>	<u>ELA]</u>	<u>IMP</u>	
• <u>IV_A</u>	-nah	-∅	-nak	-nen	(Agent-centered)
• <u>IV_U</u>	-∅	-Vl	-Vk	-en	(Undergoer-centered)

• <u>TV_A</u>	-ah	-ik	-∅/eh	∅/eh	(Agent-centered)
• <u>TV_U</u>	\/-Vb/-a'b	\/-al/-a'l	\/-Vk/-a'k	n.a.	(Undergoer-centered)

1.3. *Preverbal aspect-mood (AM) markers*

Four classes of preverbal AM markers. Each AM marker selects a particular inflection on the verb. Only verbs can take AM markers; stative predicates cannot.

Form	<u>JB: Preverbal AM prefixes</u>	<u>MB: (Non)-event mrkrs</u>	<u>Infl. on V</u>		e.g. in txt
	<i>JB</i> gloss	<i>MB</i> gloss	<i>JB</i>	<i>MB</i>	
<i>t-</i>	PRV (perfective, TV form)	TV] (completive: rel.)	CMP	IND	§1.2, §1.9 §6.2, §6.3 §6.5
<i>h-</i>	PRV (perfective, IV form)	IV] (completive: prop.)	CMP	IND	§1.2, §6.3
<i>k-</i>	IMPF (imperfective)	V (conceptual: ev. conc.)	INC	[ELA	§1.5, §1.8 (2×) §2.1, §2.2 §3.1, §3.4 §4, §5.1 §5.3, §5.3 §6.1
	<u>JB: Aspectual AM preds</u>	<u>MB: Stative asp. mrkrs</u>	<u>Infl. on V</u>		
	<i>JB</i> gloss	<i>MB</i> gloss	<i>JB</i>	<i>MB</i>	
<i>táan</i>	PROG (progressive)	PRG (progress state)	INC	ELA	§1.1, §1.3 §1.8, §3.3 §6.4, §6.5
<i>ts'o'k</i>	TERM (terminative)	PRF (result state)	INC	ELA	§1.2, §2.4 §5.3, §6.3
? <i>mukah</i> ,...	✓PROSP (prospective)	× PRE (about to, ¹ intend)	INC	ELA, w. IV SUBJ ELA], w. TV	§1.7
	<u>JB: Modal AM predicates</u>	<u>MB: Stative modal mrkrs</u>	<u>Infl. on V</u>		
	<i>JB</i> gloss	<i>MB</i> gloss	<i>JB</i>	<i>MB</i>	
<i>yan</i>	OBL (obligative)	EXP (expected)	INC	ELA	§1.5
<i>táak</i>	DES (desiderative)	DES (desired)	INC	ELA	
<i>he'</i>	ASS (assurative)	CRT (certain, ¹ promised)	INC	ELA	§6.4
<i>k'a'náan</i>	NEC (necessitative)	NEED (need)	INC	ELA	
<i>bíin</i>	PRED (predictive)	PRD (predicted)	SUBJ	ELA]	
<i>óolak</i>	PEN (penative)	ALM (almost realized)	SUBJ	ELA]	
? <i>mukah</i> ,...	× PROSP (prospective)	✓PRE (about to, ¹ intend)	INC	ELA w. IV SUBJ ELA] w. TV	§1.7
	<u>JB: Temp dist AM preds</u>	<u>MB: Graded state mrkrs</u>	<u>Infl. on V</u>		
	<i>JB</i> gloss	<i>MB</i> gloss	<i>JB</i>	<i>MB</i>	
<i>ta'itak</i>	PROX (proximate future)	PRE ₁ (just about to)	INC	ELA	
<i>táant</i>	IMM (immediate past)	PRF ₁ (short result state)	INC	ELA	
<i>sáam</i>	REC (recent past)	PRF ₂ (medium res. state)	SUBJ	ELA]	§2.1
<i>úuch</i>	REM (remote past)	PRF ₃ (long result state)	SUBJ	ELA]	

REMARKS:

- **Comparison with IE auxiliaries**

Unlike IE auxiliaries, Yukatek AM markers are *not verbs*: they don't take verbal inflections (for mood-aspect-centering 'status').

Like IE auxiliaries, the Yukatek AM markers (together with the unmarked \emptyset) form a *grammatical paradigm*—i.e. a closed system such that the grammar requires exactly one of these markers to form a finite (matrix) clause.

- **Comparison with Kalaallisut suffixes**

The Yukatek system of AM markers seems to be a *grammaticalized version* of what Kalaallisut lexicalizes as a much larger class of grammatically optional *derivational suffixes* with aspectual, prospective stative, or counterfactual, meanings.

HYPOTHESIS:

Grammaticalization involves a shift:

- from *temporal de se* (e.g. 'during the result state of entering this state of expectation')
- to relation to a *temporal topic* (e.g. 'during this topical concept of an expected future').

(Of course, since Yukatek is not genetically related to Kalaallisut, talk of 'grammaticalization' only makes sense as a *typological metaphor* (how to get from a Kalaallisut-type language to a Yukatek-type language) or a possible *diachronic development* within Yukatek.)

1.4 *Clause-initial subordination markers*

<u>Form(s)</u>	<u>JB gloss (stands for)</u>	<u>MB gloss (stands for)</u>	<u>e.g. in txt</u>
<i>káa</i>	SR (subordinator), <i>káa</i>	DEP] (dependent: compl.)	§1.2, §1.9,...
<i>kéen</i>	SR.IRR (subordinator: irrealis)	[DEP (dependent: inch.)	§1.6, §2.5

1.5 *Clause final clitics: Topic update?*

<u>Form(s)</u>	<u>JB gloss (stands for)</u>	<u>MB gloss (stands for)</u>
= <i>e</i> '	D3 (clause-final particle: textual deixis)	TM ^T (topic update: temporal/modal)
= <i>i</i> '	D4 (clause-final particle: location/negation)	LM ^T (topic update: locative/modal)
= <i>a</i> '	D1 (clause-final particle: proximal deixis)	DS ^T (topic update: topicalize this)
= <i>o</i> '	D1 (clause-final particle: distal deixis)	DT ^T (topic update: topicalize that)

1.6 *Nominal classifiers*

<u>Form(s)</u>	<u>JB gloss (stands for)</u>	<u>MB gloss (stands for)</u>
- <i>túul</i>	CL.AN (classifier, animate)	CL _α (classifier: animate)
- <i>p'éel</i>	CL.IN (classifier, inanimate)	CL _β (classifier: inanimate)
⋮	⋮	⋮

2. BEGINNING OF SAMPLE TEXT (from the Appendix)

From D. and A. Bolles, 1996, *A Grammar of the Yucatecan Mayan Language/The Exploits of Juan Thul, The Trickster Rabbit*. <http://www.famsi.org/reports/96072/grammar/section42.html>.

REVISED TRANSCRIPTION a la J. Bohnemeyer (*JB*), 2002, *A Grammar of Time Reference in Yukatek Maya*, Lincom Europa, München. REVISED TRANSLATION by M. Bittner (*MB*) 3/2/2005.

§1.1	Yàan	bin	hun-túul	chan	t'u'l-e'	<i>JB</i> ¹
	EXIST(B.3.SG)	HS	one-CL.AN	DIM	rabbit-TOP	<i>JB</i>
	<i>be.3s</i>	<i>x.SAY</i>	one-CL _α	<i>little</i>	rabbit=TM [†]	<i>MB</i>
	There was they say a little rabbit, ...					<i>AB</i>
	Once upon a time, they say, there was a little rabbit...					<i>MB</i>
	túun	chuk-pàach-t-a'l				<i>JB</i>
	PROG:A.3	catch+back-APP-PASS.INC				<i>JB</i>
	PRG.3s	catch+try-iv _A ∖iv _A -ELA.TV _U				<i>MB</i>
	...he was being sought after...					<i>AB</i>
	...who was chased...					<i>MB</i>
	tuméen	hun-túul	h-ts'òon-e'			<i>JB</i>
	CAUSE	one-CL.AN	M-shoot∧ATP-D3			<i>JB</i>
	<i>by/because</i>	one-CL _α	M-hunter= TM [†]			<i>MB</i>
	...by a hunter.					<i>AB/MB</i>
§1.2	Ts'o'k	túun	u	ka'n-al	áalkab-e'	<i>JB</i>
	TERM	CON	A.3	tire-INC	run-TOP	<i>JB</i>
	PRF	<i>then</i>	3s	tire-ELA.IV _U	run= TM [†]	<i>MB</i>
	When he finally got tired of running, ...					<i>AB</i>
	He had already got tired of running, when ...					<i>MB</i>
	káa	t-u	y-il-ah	hun-p'éel	sahkab-e'	<i>JB</i>
	<i>káa</i>	PRV-A.3	A.3-see-CMP(B.3.SG)	one-CL.IN	cave-D3	<i>JB</i>
	DEP]	TV]-3s	3s-see-IND.TV _A .3s	one-CL _β	cave= TM [†]	<i>MB</i>
	...then he saw a cave...					<i>AB</i>
	...he saw a cave and...					<i>MB</i>
	káa	(h-)òok-i'				<i>JB</i>
	<i>káa</i>	PRV-enter(B.3.SG)-D4				<i>JB</i>
	DEP]	IV].3s=enter.IND.IV _U .3s=	LM [†]			<i>MB</i>
	...then he went in.					<i>AB</i>
	...went inside.					<i>MB</i>

¹ I (*MB*) am grateful to Jürgen Bohnemeyer (*JB*) for proofreading the transcription and the glosses marked *JB*, as well as my English translations. Of course, I alone am responsible for any remaining errors of fact or interpretation.

APPENDIX: SAMPLE YUKATEK MAYA TEXT

Chan t'u'ul ichil le sahkabo'

"Little Rabbit in the Cave"

From D. and A. Bolles, 1996, *A Grammar of the Yucatecan Mayan Language/The Exploits of Juan Thul, The Trickster Rabbit*. <http://www.famsi.org/reports/96072/grammar/section42.html>.

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§1.1	Yan	bin	huntul	chan	thule	AB
	Yàan	bin	hun-túul	chan	t'u'l-e'	JB
	EXIST(B.3.SG)	HS	one-CL.AN	DIM	rabbit-TOP	JB
	be.3s	x.SAY	one-CL _α	little	rabbit=TM [†]	MB
	There was they say a little rabbit, ...					AB
	Once upon a time, they say, there was a little rabbit...					MB
	tu	chucpachtaal				AB
	túun	chuk+pàach-t-a'l				JB
	PROG:A.3	catch+back-APP-PASS.INC				JB
	PRG.3s	catch+try+iv _A \tv _A -ELA.TV _U				MB
	...he was being sought after...					AB
	...who was chased...					MB
	tumen	huntul	h-dzone.			AB
	tuméen	hun-túul	h-ts'don-e'			JB
	CAUSE	one-CL.AN	M-shoot\ATP-D3			JB
	by/because	one-CL _α	M-hunter= TM [†]			MB
	...by a hunter.					AB/MB
§1.2	Dzoc	tun	u	canal	alcabe	AB
	ts'o'k	túun	u	ka'n-al	áalkab-e'	JB
	TERM	CON	A.3	tire-INC	run-TOP	JB
	PRF	then	3s	tire-ELA.IV _U	run= TM [†]	MB
	When he finally got tired of running, ...					AB
	He had already got tired of running, when ...					MB
	ca	tu	yilah	humppel	zahcabe	AB
	káa	t-u	y-il-ah	hun-p'éel	sahkab-e'	JB
	káa	PRV-A.3	A.3-see-CMP(B.3.SG)	one-CL.IN	cave-D3	JB
	DEP]	TV]-3s	3s-see-IND.TV _A .3s	one-CL _β	cave= TM [†]	MB
	...then he saw a cave...					AB
	...he saw a cave and...					MB
	ca	oci				AB
	káa	(h-)òok-i'				JB
	káa	PRV-enter-D4				JB
	DEP]	IV].3s=enter.IND.IV _U .3s= LM [†]				MB
	...then he went in.					AB
	...went inside.					MB

§1.3	Tu	tuclíc		beya,		AB
	túun	tukl-ik		bèey-a		JB
	PROG:A.3	<i>think</i> -INC(B.3.SG)		<i>thus</i> -D1		JB
	PRG.3s	<i>think</i> -ELA.TV _A .3s		<i>thus</i> =DS [†]		MB
		He's thinking like this,				AB
		He was thinking like this:				MB
§1.4		“Machiz!				AB
		“Machis!				JB
		...				JB
		<i>oh.my</i>				MB
		“Wow!				AB
		“Oh my!				MB
§1.5	Ua	cu	ocol	le	uinic uaye	AB
	wáah	k-u	òok-ol	le	wíinik way-e'	JB
	ALT	IMPF-A.3	<i>enter</i> -INC	DEF	<i>human here</i> -TOP	JB
	IF	V-3s	<i>enter</i> -ELA.IV _U	<i>the man</i>	<i>here</i> =TM [†]	MB
			“If the man comes in here, ...			AB/MB
	yan	tun	u	dzoncen.		AB
	yan	túun	u	ts'on-ik-en		JB
	OBL	CON	A.3	<i>shoot</i> -INC-B.1.SG		JB
	EXP	<i>then</i>	3s	<i>shoot</i> -ELA.TV _A -1s		MB
			...he has then to shoot me.			AB
			...he'll shoot me.			MB
§1.6	Bi-x	tun	cin	in	bete?	AB
	Bi-x	túun	kin	in	bèet-eh?	JB
	<i>how</i>	CON	SR.IRR:A.1	A.1.SG	<i>do</i> -SUBJ(B.3.SG)	JB
	<i>how</i> -WH	<i>then</i>	[DEP.1s	1s	<i>do</i> -ELA].TV _A .3s	MB
			How am I going to do it?			AB
			So what am I to do?			MB
§1.7	N-in	caah	in	lath	le zahcabo.	AB
	ninka'h	in	lat		le sahkab-o'.	JB
	PROSP	A.1.SG	<i>hold.up</i> .SUBJ(B.3.SG)	DEF	<i>cave</i> -D2	JB
	PRE.1s	1s	<i>hold.up</i> .ELA].TV _A .3s	<i>the</i>	<i>cave</i> =DT [†]	MB
			I'm going to hold up the cave.			AB/MB
§1.8	Ua	cu	ocol		uaye	AB
	wáah	k-uy	òok-ol		way-e'	JB
	ALT	IMPF-A.3	<i>enter</i> -INC		<i>here</i> -TOP	JB
	IF	V-3s	<i>enter</i> -ELA.IV _U		<i>here</i> =TM [†]	MB
			If he comes in here, ...			AB/MB

cin	ualic	tie			AB
k-in	w-a'l-ik	ti'-e'			JB
IMPF-A.1	A.1-say-INC(B.3.SG)	LOC(B.3.SG)-D3			JB
V-1s	1s-say-ELA.TV _A .3s	OBL.3s=TM ^T			MB
...I say to him ...					AB
...I'll say to him that...					MB
desde	zihcene				AB
desde	síih-ik-en-e'				JB
since	be.born-SUBJ-B.1.SG-TOP				JB
since	be.born-ELA].IV _U -1s=TM ^T				MB
...since I was born...					AB/MB
tin	lathic	le	zahcaba.		AB
tíin	lat-ik	le	sahkab-a'.		JB
PROG:A.1	hold.up-INC(B.3.SG)	DEF	cave-D1		JB
PRG.1s	hold.up-ELA.TV _A .3s	the	cave=DS ^T		MB
...I'm holding up this cave."					AB
...I've been holding up this cave."					MB
§1.9	Ca tun tu	lathah	le	zahcabo."	AB
	káa túun t-u	lat-ah	le	sahkab-o'."	JB
	káa CON PRV-A.3	hold.up-CMP(B.3.SG)	DEF	cave-D2	JB
	DEP] then TV]-3s	hold.up-IND.TV _A .3s	the	cave=DT ^T	MB
Then he held up that cave.					AB
And then he started holding up the cave.					MB
§2.1	Zam lelo				AB
	sáam le'l-o'				JB
	recently DEM-TOP				JB
	PRF ₂ that=DT ^T				MB
After a while...					AB/MB
	cu tal	le	h-dzono.		AB
	k-u tàal	le	h-ts'òon-o'		JB
	IMPF-A.3 come.INC	DEF	M-shoot\ATP-D2		JB
	V-3s come.ELA.IV _A	the	M-hunter=DT ^T		MB
...there comes that hunter,					AB
...the hunter did come.					MB
§2.2	Cu yalic	beya,			AB
	k-u y-a'l-ik	bèey-a'			JB
	IMPF-A.3 A.3-say-INC(B.3.SG)	thus-D1			JB
	V-3s 3s-say-ELA.TV _A .3s	thus=DS ^T			MB
he says like this,					AB
And he said:					MB

§2.3	“Ah chan thul. “Ah chan t’u’l. <i>ah</i> DIM <i>rabbit</i> <i>ah</i> little <i>rabbit</i> “Ah, little rabbit. “Ah, Little Rabbit.	AB JB JB MB AB MB
§2.4	Dzoc in caxlitech, ts’o’k in kaxt-ik-ech TERM A.1.SG <i>search</i> :APP-INC-B.2.SG PRF 1s <i>find</i> -ELA.TV _A -2s I’ve just found you. I’ve found you.	AB JB JB MB AB MB
§2.5	Beyhora kin in dzonecha!” be’ðora k-in in ts’on-ech-a’ <i>now</i> SR.IRR:A.1 A.1.SG <i>shoot</i> -SUBJ.B.2.SG-D1 <i>now</i> [DEP.1s 1s <i>shoot</i> -ELA].TV _A -2s=DS ^T Now I’m going to shoot you!”	AB JB JB MB AB/MB
§3.1	“Ay nohoch dzul, ma teni!” “Ay nohoch ts’u’l, ma’+téen-i’!” <i>oh</i> big <i>sir</i> NEG+EMPH-D4 <i>oh</i> big <i>sir</i> neg+EMPH=LM ^T “Oh, old gentleman, that wasn’t me!” “Oh, respected sir, please don’t!”	AB JB JB MB AB MB
	cu yalic ti, k-u y-a’l-ik ti’ IMPF-A.3 A.3SG- <i>say</i> -INC(B.3.SG) LOC(B.3.SG) V-3s 3s- <i>say</i> -ELA.TV _A -3s OBL.3s he said to him.	AB JB JB MB AB/MB
§3.2	Desde zihcene Desde síih-ik-en-e’ <i>since</i> <i>be.born</i> -SUBJ-B.1.SG-TOP <i>since</i> <i>be.born</i> -ELA].IV _U -1S=TM ^T Since I was born...	AB JB JB MB AB/MB
	uay yanen ten tela. way yàan-en tèen te’l-a’. <i>here</i> EXIST-B.1.SG <i>me</i> <i>there</i> -D1 <i>here</i> <i>be</i> -1s <i>me</i> <i>there</i> =DS ^T ...here I’ve been here. ...I’ve been here in this place.	AB JB JB MB AB MB

§3.3	Tin	lathic	le	zahcaba.	AB
	Tiin	lat-ik	le	sahkab-a'.	JB
	PROG:A.1	<i>hold.up</i> -INC(B.3.SG)	DEF	<i>cave</i> -D1	JB
	PRG.1s	<i>hold.up</i> -ELA.TV _A .3s	<i>the</i>	<i>cave</i> =DS ^T	MB
				I'm holding up this cave.	AB
				I've been holding up this cave.	MB
§3.4	Ua	mae,			AB
	Wàah	ma'-e'			JB
	ALT	NEG-TOP			JB
	IF	<i>not</i> =TM ^T			MB
				If not, ...	AB
				Otherwise, ...	MB
	cu	lubul			AB
	k-u	lúub-ul.			JB
	IMPF-A.3	<i>fall</i> -INC			JB
	V-3s	<i>fall</i> -ELA.IV _U			MB
				...it falls."	AB/MB
§4	"Am	beyo?"			AB
	"Am	bèey-o'?"			JB
	<i>oh</i>	<i>thus</i> -D2			JB
	<i>oh</i>	<i>thus</i> =DT ^T			MB
				"Oh is that so?"	AB/MB
	cu	yalic	le	h-dzone,	AB
	k-u	y-a'l-ik	le	h-ts'òon-e'	JB
	IMPF-A.3	A.3- <i>say</i> -INC(B.3.SG)	DEF	M- <i>shoo</i> ΛATP-D3	JB
	V-3s	3s- <i>say</i> -ELA.TV _A .3s	<i>the</i>	M- <i>hunter</i> =TM ^T	MB
				says the hunter.	AB
				said the hunter.	MB
§5.1	"Beyo."				AB
	"Bèey-o'."				JB
	<i>thus</i> -D2				JB
	<i>thus</i> =DT ^T				MB
				"Like that"	AB
				"It is so"	MB
	cu	yalic	chan	thul.	AB
	k-u	y-a'l-ik	chan	t'u'l.	JB
	IMPF-A.3	A.3- <i>say</i> -INC(B.3.SG)	DIM	<i>rabbit</i>	JB
	V-3s	3s- <i>say</i> -ELA.TV _A .3s	<i>little</i>	<i>rabbit</i>	MB
				says the little rabbit.	AB
				said Little Rabbit.	MB

§5.2	Ti	yan	in	mama	te	ichil	le	zuuco.	AB
	Ti'	yàan	in	màama	te'l	ich-il	le	sùuk-o'	JB
	LOC(B.3.SG)	EXIST(B.3.SG)	A.1.SG	<i>mother</i>	<i>there</i>	<i>in-REL</i>	DEF	<i>grass-D2</i>	JB
	LOC.3s	<i>be.3s</i>	1s	<i>mother</i>	<i>there</i>	<i>in-rn</i>		<i>the grass=DT^T</i>	MB
	My mother is in the grass.								AB
	Over there is my mother in the grass.								MB
§5.3	Ua	ca		machic		le		zahcaba.	AB
	wáah	k-a		mach-ik		le		sahkab-a'.	JB
	ALT	IMPF-A.2		<i>take.hold-INC(B.3.SG)</i>		DEF		<i>cave-D1</i>	JB
	IF	V-2s		<i>take.hold.of-ELA.TV_A.3s</i>				<i>the cave=DS^T</i>	MB
	If you take hold of this cave,...								AB/MB
	cin	bin		ual		ti			AB
	k-in	bin		w-a'l		ti'			JB?
	IMPF-A.1	<i>go.ENC</i>		<i>1s-say.SUBJ(B.3.SG)</i>		LOC(B.3.SG)			JB?
	V-1s	<i>go.ELA.IV_A</i>		<i>1s-say.ELA].TV_A.3s</i>		OBL.3s			MB
	...I'm going to tell her...								AB
	...I'll go to tell her...								MB
	ca	tac		u		uanten			AB
	káa	tàal-ak		uw		àant-en			JB?
	<i>káa</i>	<i>come-SUBJ</i>		A.3		<i>help-SUBJ.B.1.SG</i>			JB?
	DEP]	<i>come-ELA].IV_U</i>		3s		<i>help-ELA].TV_A.1s</i>			MB
	...to come help me...								AB
	...to come to help me...								MB
	tumen	dzoc		in		canal."			AB
	tuméen	ts'o'k		in		ka'n-al."			JB
	CAUSE	TERM		A.1.SG		<i>tire-INC</i>			JB
	<i>by/because</i>	PRF		1s		<i>tire-ELA.IV_U</i>			MB
	...because I'm already tired."								AB/MB
§6.1	"Malob"								AB
	"Ma'+lóob"								JB
	NEG+ <i>bad</i>								JB
	<i>good</i>								MB
	"O.K."								AB/MB
	cu	yalic		le		h-dzono,			AB
	k-u	y-a'l-ik		le		h-ts'òon-o'			JB
	IMPF-A.3	A.3- <i>say-INC(B.3.SG)</i>		DEF		M- <i>shoot</i> ∧ATP-D2			JB
	V-3s	<i>3s-say-ELA.TV_A.3s</i>				<i>the M-hunter=DT^T</i>			MB
	says that hunter.								AB
	says the hunter.								MB

§6.2	Ca	tu	lathah	le	zahcaba.	AB
	káa	t-u	lat-ah	le	sahkab-a'.	JB
	káa	PRV-A.3	<i>hold.up</i> -CMP(B.3.SG)	DEF	<i>cave</i> -D1	JB
	DEP]	TV]-3s	<i>hold.up</i> -IND.TV _A .3s	<i>the</i>	<i>cave</i> =DS [†]	MB
					Then he held up that cave.	AB
					And he took hold of the cave.	MB
§6.3	Ca	tu	yilah	chan	thul	AB
	káa	t-u	y-il-ah	chan	t'u'l	JB
	káa	PRV-A.3	A.3- <i>see</i> -CMP(B.3.SG)	DIM	<i>rabbit</i>	JB
	DEP]	TV]-3s	3s- <i>see</i> -IND.TV _A .3s	<i>little</i>	<i>rabbit</i>	MB
					When the little rabbit saw that...	AB
					When Little Rabbit saw that...	MB
	tzoc	u	tuzic	le	maco,	AB
	ts'o'k	u	tùus-ik	le	máak-o'	JB
	TERM	A.3	<i>lie</i> :APP-INC(B.3.SG)	DEF	<i>man</i> -TOP	JB
	PRF	3s	<i>deceive</i> -ELA.TV _A .3s	<i>the</i>	<i>man</i> =DT [†]	MB
					...he had just fooled that man,...	AB
					...he had fooled the man,...	MB
	ca	bini.				AB
	káa	(h-)bin-i'.				JB
	káa	PRV- <i>go</i> (B.3.SG)-D4				JB
	DEP]	IV].3s= <i>go</i> .IND.IV _U .3s=LC [†]				MB
					...then he went.	AB
					...he took off.	MB
§6.4	Le	h-dzon	tuno			AB
	le	h-ts'òon	túun-o'			JB
	DEF	M- <i>shoot</i> \ATP	CON-TOP			JB
	<i>the</i>	M- <i>hunter</i>	<i>then</i> =DT [†]			MB
					That hunter then ...	AB
					Meanwhile the hunter ...	MB
	tu	tuclic				AB
	túun	tukl-ik				JB
	PROG:A.3	<i>think</i> -INC(B.3.SG)				JB
	PRG.3s	<i>think</i> -ELA.TV _A .3s				MB
					... is thinking that...	AB
					... thought that...	MB
	he	u	zut	le	thulo,	AB
	he'	u	sùut	le	t'u'l-o'	JB
	ASS	A.3	<i>turn</i> \ATP-INC	DEF	<i>rabbit</i> -D2	JB
	CRT	3s	<i>return</i> -ELA.IV _A	<i>the</i>	<i>rabbit</i> =DT [†]	MB
					...the rabbit will return.	AB
					...the rabbit <i>would</i> return.	MB/JB

§6.5	Tu	paatic			<i>AB</i>
	túun	pa't-ik			<i>JB</i>
	PROG:A.3	<i>await</i> -INC(B.3.SG)			<i>JB</i>
	PRG.3s	<i>wait.for</i> -ELA.TV _A .3s			<i>MB</i>
		He is waiting for...			<i>AB</i>
		He waited for...			<i>MB</i>
	u	zut	le	thulo,	<i>AB</i>
	u	sùut	le	t'u'l-o'	<i>JB</i>
	A.3	<i>turn</i> \ATP-INC	DEF	<i>rabbit</i> -D2	<i>JB</i>
	3s	<i>return</i> -ELA.IV _A	<i>the</i>	<i>rabbit</i> =DT ^T	<i>MB</i>
		...the return of that rabbit...			<i>AB</i>
		...the rabbit to return...			<i>MB</i>
	pero	ma		zunahi.	<i>AB</i>
	pero	ma'		sùu-nah-i'	<i>JB</i>
	<i>but</i>	NEG		<i>turn</i> \ATP-CMP-D4	<i>JB</i>
	<i>but</i>	<i>not</i> .3s		<i>return</i> -IND.IV _A =LM ^T	<i>MB</i>
		...but he did not return.			<i>AB/MB</i>
§6.6	Bin	tu		betah.	<i>AB</i>
	Bin	t-u		bèet-ah.	<i>JB</i>
	<i>go</i> (INC)	PRV-A.3		<i>do</i> -CMP(B.3.SG)	<i>JB</i>
	<i>go</i> .ELA.IV _A	TV]-3s		<i>do</i> -IND.TV _A .3s	<i>MB</i>
		He made off.			<i>AB</i>
		He just kept on going.			<i>MB</i>

Formalization (1): Non-future Yukatek discourse online

1. KEY PLAYERS IN TEMPORAL ANAPHORA (in the order of appearance)

- *Clause-initial dependency markers*

<u>Form(s)</u>	<u>MB gloss (stands for)</u>	<u>e.g. in txt</u>
<i>káa</i>	DEP] (dependent: done)	§1.2, §1.9, ...
<i>kéen</i>	[DEP (dependent: begun)	§1.6, §2.5

- *Preverbal aspect-mood (AM) markers*

<u>Form</u>	<u>MB gloss (stands for)</u>	<u>Infl. on V</u>	<u>e.g. in txt</u>
<i>t-</i>	TV] (done event-TV)	IND	§1.2, §1.9, §6.2, §6.3, §6.5
<i>h-</i>	IV] (done event-IV)	IND	§1.2, §6.3
<i>k-</i>	V (event-valued concept)	ELA	§1.5, §1.8 (2×), §2.1, §2.2, §3.1...
<i>ts'o'k</i>	PRF (final result state)	ELA	§1.2, §2.4, §5.3, §6.3
<i>táan</i>	PRG (initial result state)	ELA	§1.1, §1.3, §1.8, §3.3, §6.4, §6.5
<i>óolak</i>	ALM (prefinal result state)	ELA]	
<i>táak</i>	DES (desired)	ELA	
<i>k'a'náan</i>	NEED (needed)	ELA	
<i>he'</i>	CRT (certain)	ELA	§6.4
<i>yan</i>	EXP (expected)	ELA	§1.5
<i>bíin</i>	PRD (predicted)	ELA]	
<i>mukah,...</i>	PRE (about to, 'intend)	ELA w. IV ELA] w. TV	§1.7
<i>ta'itak</i>	PRE ₁ (just about to, 'intend soon)	ELA	
<i>táant</i>	PRF ₁ (short result state)	ELA	
<i>sáam</i>	PRF ₂ (medium res. state)	ELA]	§2.1
<i>úuch</i>	PRF ₃ (long result state)	ELA]	

- *Verbal mood-aspect-centering inflection*

	<u>IND</u>	<u>ELA</u>	<u>ELA]</u>	<u>IMP</u>	
• <u>IV_A</u>	<i>-nah</i>	$-\emptyset$	<i>-nak</i>	<i>-nen</i>	(Agent-centered)
• <u>IV_U</u>	$-\emptyset$	<i>-Vl</i>	<i>-Vk</i>	<i>-en</i>	(Undergoer-centered)
<hr/>					
• <u>TV_A</u>	<i>-ah</i>	<i>-ik</i>	$-\emptyset/-eh$	$\emptyset/-eh$	(Agent-centered)
• <u>TV_U</u>	$\setminus/-Vb/-a'b$	$\setminus/-al/-a'l$	$\setminus/-Vk/-a'k$	n.a.	(Undergoer-centered)

- *Topic update by clause boundary clitics*

= <i>e'</i>	TM ^T (topic update: temporal/modal)
= <i>i'</i>	LM ^T (topic update: locative/modal)
= <i>a'</i>	DS ^T (clause-final topic update: topicalize this)
= <i>o'</i>	DT ^T (clause-final topic update: topicalize that)

2. MATRIX INDICATIVE PRESUPPOSES REALITY

• *Realized events (& processes)*

(1) Tèen=e' ti' h máan-en ho'lheak te k'áax=o'. JB
 me=TM^T OBL IV] *pass.IND.IV_U-1s yesterday OBL.the jungle=DT^T* MB
 I went through the forest yesterday. JB

Chéen ichil in màan=e' JB
just in 1s pass=TM^T MB
 While I was just passing through, ... MB

káa t-in ya'che-t-ah hun-túul kàan. JB
 DEP] TV]-1s *step-iv_A\tv_A-IND.TV_A.3s one-CL_α snake* MB
 ...I stepped on a snake. JB

Káa t-u chi'-ah in péekòok=e' JB
 DEP] TV]-3s *bite-IND.TV_A.3s 1s thigh=TM^T* MB
 It bit me in the thigh, ... JB

káa túun t-in ch'a'-ah hun-p'éel tunich JB
 DEP] *then TV]-1s grab-IND.TV_A.3s one-CL_β stone* MB
 ...so I grabbed a stone JB

káa t-in ch'in-ah le kàan=o' JB
 DEP] TV]-1s *throw.at-IND.TV_A.3s the snake=DT^T* MB
 ...and threw it at the snake JB

káa h kim-ih. JB
 DEP] IV] *die-IND.IV_U.3s* MB
 ...and it died. (JB, p. 249)

(2) Káa t-u ts'íib-t-ah hun-p'éel kàarta Pedro=e' JB
 DEP] TV]-3s *write-iv_A\tv_A-IND.TV_A.3s one-CL_β letter Pedro=TM^T* MB
 Pedro wrote a letter, and ... JB

Juan=e' káa t-u ts'u'ts'-ah hun-p'éel chamal. JB
Juan=TM^T DEP] TV]-3s smoke-IND.TV_A.3s one-CL_β cigarette. MB
 ...Juan smoked a cigarette. (preferred: *simultaneous*) (JB, p. 252)

• *Factual event clause in Yukatek* Cf. *Kalaallisut*

DEP] $\rightsquigarrow [el e \subseteq_{d\omega} \vartheta RS d\varepsilon];$
 $(_{if} [t\mathbf{t} =_{d\omega} \vartheta RS d\varepsilon_1])$

die- $\rightsquigarrow [el e: DA die_{d\omega}]$

IV]- $\rightsquigarrow [l d\varepsilon \subseteq_{d\omega} d\tau];$
 $[l DA d\varepsilon =_{d\omega} d\alpha]$

-IND $\rightsquigarrow P[l d\varepsilon <_{d\omega} d\varepsilon]$

-IND $\rightsquigarrow P[l d\varepsilon <_{d\omega} d\varepsilon]; [l d\varepsilon \subseteq_{d\omega} d\tau];$

=TM^T $\rightsquigarrow [t\mathbf{t} =_{d\omega} \vartheta RS d\varepsilon]$

-FCT_T $\rightsquigarrow P[l DA d\varepsilon =_{d\omega} d\alpha]; [l d\varepsilon \subseteq_{d\omega} d\tau]; [t\mathbf{t} =_{d\omega} \vartheta RS d\varepsilon]$

- *Realized beginnings of current processes*

- (3) Rabbit planning to trick the hunter: “If he comes here, I’ll tell him that since I was born...
 tíin lat-ik le sahkab-a’. JB
 PRG.1s hold.up-ELA.TV_A.3s the cave=DS^T MB
 ...I’ve been holding up this cave.” MB
- káa túun t-u lat-ah le sahkab-o’.” JB
 DEP] then TV]-3s hold.up-IND.TV_A.3s the cave=DT^T MB
 So then he began to hold up the cave. MB
- (4) Mukah-en inw a’l tèech JB
 PRE-1s 1s say.ELA].TV_A you MB
 I’m going to tell you... JB
- ba-x k-inw il-ik te béentana be’òora=a’. JB
 what-WH V-1s see-ELA.TV_A OBL.the window now=DS^T MB
 what I see through the window right now. MB
- Hun-túul xibpàal y-éetel hun-túul x-ch’úupal JB
 one-CL_α boy 3s-with one-CL_α F-girl MB
 A boy and a girl... JB
- táan u bàaxal-o’b te kàaye=o’. JB
 PRG 3p play.ELA.IV_A-3p OBL.the street=DT^T MB
 ...are playing in the street. JB
- Be’òora=a’ le xibpàal ts’-u ch’a’-ik le bòola=o’ JB
 now=DS^T the boy PRF-3s grab-ELA.TV_A.3s the ball=DT^T MB
 Right now the boy has grabbed the ball... JB
- i t-u pul-ah te x-ch’úupal=o’. JB
 and TV]-3s throw-IND.TV_A.3s OBL.the F-girl=DT^T MB
 ...and he throws it to the girl. JB
- Be’òora=a’ le x-ch’úupal=o’ JB
 now=DS^T the F-girl=DT^T MB
 Now the girl,... JB
- t-u pul-ah te xibpàal=o’ pàach-il ti’=o’. JB
 TV]-3s throw-IND.TV_A.3s OBL.the boy=DT^T back-n\vrn OBL.3s=DT^T MB
 ...she throws it back to the boy. (JB, p. 253)

- *Factual process clause in Yukatek* Cf. *Kalaallisut*

IV]- \rightsquigarrow [eel¹ee $\subseteq_{d\omega}$ d τ];
 [I AG d $\varepsilon\varepsilon$ =_{d ω} d α]

fly- \rightsquigarrow [eel ee: AG fly_{d ω}]

-IND \rightsquigarrow ^P[I¹d $\varepsilon\varepsilon$ <_{d ω} d ε];

-IND \rightsquigarrow ^P[I¹d $\varepsilon\varepsilon$ <_{d ω} d ε]; [I¹d $\varepsilon\varepsilon$ $\subseteq_{d\omega}$ d τ];

=DT^T \rightsquigarrow [tI t =_{d ω} \varnothing RS¹d $\varepsilon\varepsilon$]

-FCT_T \rightsquigarrow ^P[I AG d $\varepsilon\varepsilon$ =_{d ω} d α]; [I¹d $\varepsilon\varepsilon$...]; [tI t =_{d ω} \varnothing RS¹d $\varepsilon\varepsilon$]

3. INDICATIVE DISCOURSE ONLINE

reality ^τw*:
 • ^τe*: speech event
 | ^τt*: e*-now

(1) I went through...
 Tèen =e' if
 me (if) =TM^τ
 [a| a =_{dω} AG dε]; [^][e|]; [t| t =_{dω} ΘRS dε];
 ti'
 OBL
 [k^π ee| ee: k^π{ε} ⊆_{dω} Π{ε}];
 h ib
 IV]
 [l¹ dεε ⊆_{dω} dτ]; [l DA dεε =_{dω} dα];
 máan- mf
 pass-
 [l dεε: DA pass.thru_{dω} dκ^π];
 -Ø -en
 -IND. .IV_U -1s
 P[l¹ dεε <_{dω} dε]; [l DA dεε =_{dω} dα]; [l l_{s_{dω}} dα]

reality ^τw*:
 • ^τe*: speech event
 | ^τt*: e*-now
 || ^τt_{1.1}: ee₁-start time
 if ||
 ib, mf ••••• ee₁: e*-spkr passes through k^π₁

...the forest yesterday.
 ho'lheak fb
 yesterday
 [t| dεε ⊆_{dω} t ⊆ yesterday.of(dε)]

te k'áax =o'. ff
 OBL.the jungle =DT^τ
 [l dεε: dκ^π{ε} ⊆_{dω} dκ^π{dε}]; [l local.jungle dκ^π]; [t| t =_{dω} ΘRS¹ dεε];

reality ^τw*:
 • ^τe*: speech event
 | ^τt*: e*-now
 || ^τt_{1.1}: ee₁-start time
 ••••• ee₁: e*-spkr passes through e*-local k^π₁-jungle
 fb |||
 ff || t_{1.2}: ee₁-frame, within e*-yesterday
^τt_{1.3} = Θ_{w*} RS_{w*}¹ ee₁
 ee₁-start result time, frame for 2nd ee₁-stage

(2) While I was just passing through...

Chéen ichil if
just in
 ... [el e ∈ dεε];

in màan =e'
 1s *pass* =TM[†]
^P[l *Is* dα]; [l DA dεε =_{dω} dα]; ^P[l dεε: DA *pass.thru*_{dω} dκ^π]; [tl t =_{dω} ΘRS dε];

...I stepped on a snake.

káa ib
 DEP]
 [el e ⊆_{dω} ΘRS dε];

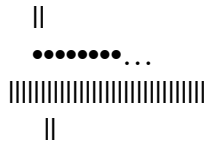
t- -in
 TV]- -1s
 [l dε ⊆_{dω} dτ]; [l AG dε =_{dω} dα, dα ≠_{dω} DA dε]; [l *Is* dα];

ya'che- -t- mf
step- -iv_A tv_A-
 [l dε: AG *take.a.step*_{dω}]; [al DA dε =_{dω} a];

-ah
 -IND. .TV_A .3s
^P[l dε <_{dω} dε]; [l AG dε =_{dω} dα, DA dε =_{dω} dα, dα ≠ dα]; [l 3s_{dω} dα]

hun- -túul kàan. ff
one- -CL_α *snake*
 [k^α | *one*(dα, k^α)]; ^P[l *animate* dκ^α]; [l *snake* dκ^α]

reality [†]w*:



if



ib



- [†]e*: speech event
- | t*: e*-now
- t_{1.1}: ee₁-start time
- ee₁: e*-spkr passes through e*-local k^π₁-jungle
- t_{1.2}: ee₁-frame, within e*-yesterday
- t_{1.3} = Θ_{w*} RS_{w*}¹ ee₁
 ee₁-start result time, frame for 2nd ee₁-stage
- e_{2.1} ∈ ee₁: stage in ee₁-passing through
- [†]t₂ = Θ_{w*} RS_{w*} e_{2.1}
 result time of e_{2.1}-stage of ee₁-passing thru
- e_{2.2}: e*-spkr steps on k^α₂-snake a₂

(3) It bit me in the thigh (*lit.* bit my thigh)

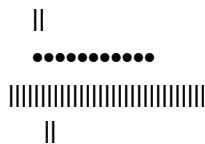
Káa *if*
 DEP] (*if*)
 [el e $\subseteq_{d\omega}$ ϑ RS d ε]; [tl t = $_{d\omega}$ ϑ RS d ε_1];

t- *ib*
 TV]- -u
-3s
 [l d $\varepsilon \subseteq_{d\omega}$ d τ]; [l AG d $\varepsilon =_{d\omega}$ d α , AG d $\varepsilon \neq_{d\omega}$ OB d ε]; [l 3s $_{d\omega}$ d α]; [al a = d α];

chi'- *mf*
 bite-
 [bl d ε : AG bite $_{d\omega}$ b];

-ah
 -IND .TV_A .3s
 P[l d $\varepsilon <_{d\omega}$ d ε]; [l AG d $\varepsilon =_{d\omega}$ d α , OB d $\varepsilon =_{d\omega}$ d β]; [l 3s $_{d\omega}$ d β]

in *ff*
 1s péekòok =e'
thigh =TM[†]
 P[l 1s d α_1]; [b $_{\alpha}$ l d $\beta = b_{\alpha}(d\alpha_1)$]; [l d β α thigh.of $_{d\omega}$ α]; [tl t = $_{d\omega}$ ϑ RS d ε];

reality $\top w^*$:

•

||

•

•

||

*if**ff*

||

- $\top e^*$: speech event
- | t^* : e^* -now
- $t_{1.1}$: ee_1 -start time
- ee_1 : e^* -spkr passes through e^* -local k^x_1 -jungle
- $t_{1.2}$: ee_1 -frame, within e^* -yesterday
- $t_{1.3} = \vartheta_{w^*} RS_{w^*}^1 ee_1$
 ee_1 -start result time, frame for 2nd ee_1 -stage
- $e_{2.1} \in ee_1$: stage in ee_1 -passing through
- $t_2 = \vartheta_{w^*} RS_{w^*} e_{2.1}$
 result time of $e_{2.1}$ -stage of ee_1 -passing thru
- $e_{2.2}$: e^* -spkr steps on k^{α}_2 -snake a_2
- $e_{3.1}$: snake a_2 bites e^* -spkr's thigh b_3
- $(\top)t_{3.1} = \vartheta_{w^*} RS_{w^*} e_{2.2}$:
 result time of $e_{2.2}$ -stepping on snake a_2
- $\top t_{3.2} = \vartheta_{w^*} RS_{w^*} e_{3.1}$:
 result time of $e_{3.1}$ -snake bite

(4) ...so I grabbed a stone...

káa túun *if*
 DEP] *then*
 [el e $\subseteq_{d\omega}$ ϑ RS d ϵ]; P[$[\mathbf{d}\tau =_{d\omega}$ ϑ RS d ϵ_1];

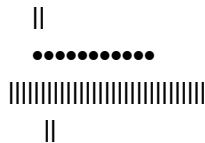
t- -in *ib*
 TV]- -1s
 [l d $\epsilon \subseteq_{d\omega}$ $\mathbf{d}\tau$]; [l AG d $\epsilon =_{d\omega}$ $\mathbf{d}\alpha_1$, AG d $\epsilon \neq_{d\omega}$ OB d ϵ]; [l $Is_{d\omega}$ $\mathbf{d}\alpha_1$]: [al a = $\mathbf{d}\alpha_1$]

ch'a'- *mf*
 grab-
 [l d ϵ : AG grab $_{d\omega}$ OB];

-ah
 -IND .TV_A .3s
 P[$[\mathbf{d}\epsilon <_{d\omega}$ $\mathbf{d}\epsilon$]; [bl AG d $\epsilon =_{d\omega}$ $\mathbf{d}\alpha$, OB d $\epsilon =_{d\omega}$ b]; [l $3s_{d\omega}$ d β]

hun -p'éel tunich *ff*
 one- -CL $_{\beta}$ stone
 [k^{β}] one(d β , k^{β}); P[$[\mathbf{inanimate}$ d k^{β}]; [l stone d k^{β}]

reality $\top w^*$:



- $\top e^*$: speech event
- | t^* : e^* -now
- $t_{1.1}$: ee_1 -start time
- ee_1 : e^* -spkr passes through e^* -local k^{π_1} -jungle
- $t_{1.2}$: ee_1 -frame, within e^* -yesterday
- $t_{1.3} = \vartheta_{w^*} RS_{w^*}^1 ee_1$
- ee_1 -start result time, frame for 2nd ee_1 -stage
- $e_{2.1} \in ee_1$: stage in ee_1 -passing through
- $t_2 = \vartheta_{w^*} RS_{w^*} e_{2.1}$
- result time of $e_{2.1}$ -stage of ee_1 -passing thru
- $e_{2.2}$: e^* -spkr steps on k^{α_2} -snake a_2
- e_3 : snake a_2 bites e^* -spkr's thigh b_3
- $t_{3.1} = \vartheta_{w^*} RS_{w^*} e_{2.2}$:
- result time of $e_{2.2}$ -stepping on snake a_2
- $\top t_{3.2} = \vartheta_{w^*} RS_{w^*} e_3$:
- result time of e_3 -snake bite
- e_4 : e^* -spkr grabs k^{β}_4 -stone b_4

if

(5) ...and threw it at the snake...

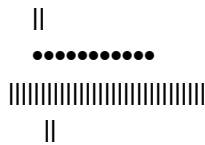
káa if
 DEP] (if)
 [el e $\subseteq_{d\omega}$ ϑ RS d ϵ]; [tl t = $_{d\omega}$ ϑ RS d ϵ_1];

t- -in ib
 TV]- -1s
 [l d ϵ $\subseteq_{d\omega}$ d τ]; [l AG d ϵ = $_{d\omega}$ d α , AG d ϵ $\neq_{d\omega}$ DA d ϵ]; [l l s $_{d\omega}$ d α]

ch'in- mf
 throw.at-
 [l d ϵ : AG throw.at $_{d\omega}$ d β DA];

-ah
 -IND .TV_A .3s
 P[l d ϵ < $_{d\omega}$ d ϵ]; [l AG d ϵ = $_{d\omega}$ d α , DA d ϵ = $_{d\omega}$ d α]; [l 3s $_{d\omega}$ d α]

le kàan ff
 the snake
 [l d α = $_{d\omega}$ d κ^α {d ϵ }; [l snake d κ^α]

reality $\top w^*$:

•

||

•

•

||

||

•

•

||

if

- $\top e^*$: speech event
- | t^* : e^* -now
- $t_{1.1}$: ee_1 -start time
- ee_1 : e^* -spkr passes through e^* -local k^{π_1} -jungle
- $t_{1.2}$: ee_1 -frame, within e^* -yesterday
- $t_{1.3} = \vartheta_{w^*} RS_{w^*}^1 ee_1$
 ee_1 -start result time, frame for 2nd ee_1 -stage
- $e_{2.1} \in ee_1$: stage in ee_1 -passing through
- $t_2 = \vartheta_{w^*} RS_{w^*} e_{2.1}$
 result time of $e_{2.1}$ -stage of ee_1 -passing thru
- $e_{2.2}$: e^* -spkr steps on k^{α_2} -snake a_2
- e_3 : snake a_2 bites e^* -spkr's thigh b_3
- $t_{3.1} = \vartheta_{w^*} RS_{w^*} e_{2.2}$:
 result time of $e_{2.2}$ -stepping on k^{α_2} -snake a_2
- $t_{3.2} = \vartheta_{w^*} RS_{w^*} e_3$:
 result time of e_3 -snake bite
- e_4 : e^* -spkr grabs k^{β_4} -stone b_4
- e_5 : e^* -spkr throws k^{β_4} -stone b_4 at k^{α_2} -snake a_2
- $\top t_5 = \vartheta_{w^*} RS_{w^*} e_4$
 result time of e_4 -stone grabbing

(6) ...and it died.

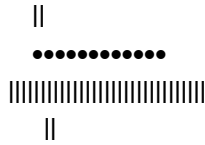
káa if
 DEP] (if)
 [el e $\subseteq_{d\omega}$ ϑ RS d ε]; [tl t = $_{d\omega}$ ϑ RS d ε_1];

h ib
 IV]
 [l d ε $\subseteq_{d\omega}$ d τ]; [l DA d ε = $_{d\omega}$ d α]; [al a = d α]

kim- mf
 die-
 [l d ε : DA die $_{d\omega}$];

-ih
 -IND .IV_U .3s
 P[l d ε < $_{d\omega}$ d ε]; [l DA d ε = $_{d\omega}$ d α]; [l 3s $_{d\omega}$ d α]

reality $\top w^*$:



•
 ||

•
 •
 ||

||

•
 •
 ||

if

•
 ||

- $\top e^*$: speech event
- | t^* : e^* -now
- $t_{1.1}$: ee_1 -start time
- ee_1 : e^* -spkr passes through e^* -local k^{π}_1 -jungle
- $t_{1.2}$: ee_1 -frame, within e^* -yesterday
- $t_{1.3} = \vartheta_{w^*} RS_{w^*}^1 ee_1$
 ee_1 -start result time, frame for 2nd ee_1 -stage
- $e_{2.1} \in ee_1$: stage in ee_1 -passing through
- $t_2 = \vartheta_{w^*} RS_{w^*} e_{2.1}$
 result time of $e_{2.1}$ -stage of ee_1 -passing thru
- $e_{2.2}$: e^* -spkr steps on k^{α}_2 -snake a_2
- e_3 : snake a_2 bites e^* -spkr's thigh b_3
- $t_{3.1} = \vartheta_{w^*} RS_{w^*} e_{2.2}$:
 result time of $e_{2.2}$ -stepping on k^{α}_2 -snake a_2
- $t_{3.2} = \vartheta_{w^*} RS_{w^*} e_3$:
 result time of e_3 -snake bite
- e_4 : e^* -spkr grabs k^{β}_4 -stone b_4
- e_5 : e^* -spkr throws k^{β}_4 -stone b_4 at k^{α}_2 -snake a_2
- $t_5 = \vartheta_{w^*} RS_{w^*} e_4$
 result time of e_4 -stone grabbing
- e_6 : snake a_2 dies
- $\top t_6 = \vartheta_{w^*} RS_{w^*} e_5$
 result time of e_5 -stone throwing

Formalization (2): Grammaticalized reference to result states in Yukatek

1. GRAMMATICAL MARKERS REFERRING TO RESULT STATES (in the order of appearance)

- *Clause-initial dependency markers*

<u>Form(s)</u>	<u>MB gloss (stands for)</u>	<u>e.g. in txt</u>
<i>kéen</i>	[DEP (dependent: begun)]	§1.6, §2.5
<i>káa</i>	DEP] (dependent: done)	§1.2, §1.9,...

- *Preverbal aspect-mood (AM) markers*

<u>Form</u>	<u>MB gloss (stands for)</u>	<u>Infl. on V</u>	<u>e.g. in txt</u>
<i>kap'</i>	[V (begin)]	ELA	
<i>t-</i>	TV] (done event-TV)	IND	§1.2, §1.9, §6.2, §6.3, §6.5
<i>h-</i>	IV] (done event-IV)	IND	§1.2, §6.3
<i>k-</i>	V (event-valued concept)	ELA	§1.5, §1.8 (2×), §2.1, §2.2, §3.1...
<i>ts'o'k</i>	PRF (final result state)	ELA	§1.2, §2.4, §5.3, §6.3
<i>táan</i>	PRG (initial result state)	ELA	§1.1, §1.3, §1.8, §3.3, §6.4, §6.5
<i>óolak</i>	ALM (prefinal result state)	ELA]	
<i>táak</i>	DES (desired)	ELA	
<i>k'a'náan</i>	NEED (needed)	ELA	
<i>he'</i>	CRT (certain)	ELA	§6.4
<i>yan</i>	EXP (expected)	ELA	§1.5
<i>bíin</i>	PRD (predicted)	ELA]	
<i>mukah,...</i>	PRE (about to, ^l intend)	ELA w. IV ELA] w. TV	§1.7
<i>ta'itak</i>	PRE ₁ (just about to, ^l intend soon)	ELA	
<i>táant</i>	PRF ₁ (short result state)	ELA	
<i>sáam</i>	PRF ₂ (medium result state)	ELA]	§2.1
<i>úuch</i>	PRF ₃ (long result state)	ELA]	

- *Verbal mood-aspect-centering inflection*

	<u>IND</u>	<u>ELA</u>	<u>ELA]</u>	<u>IMP</u>	
• <u>IV</u> _A	-nah	-∅	-nak	-nen	(Agent-centered)
• <u>IV</u> _U	-∅	-Vl	-Vk	-en	(Undergoer-centered)
<hr/>					
• <u>TV</u> _A	-ah	-ik	-∅/-eh	∅/-eh	(Agent-centered)
• <u>TV</u> _U	\/-Vb/-a'b	\/-al/-a'l	\/-Vk/-a'k	n.a.	(Undergoer-centered)

- *Topic update by clause final clitics*

=e'	TM ^T (topic update: temporal/modal)
=i'	LM ^T (topic update: locative/modal)
=a'	DS ^T (topic update: topicalize this)
=o'	DT ^T (topic update: topicalize that)

2. PERFECTIVE ('TERMINATIVE') ASPECT VS. PAST TENSE; INDICATIVE VS. ELABORATING MOOD

• Cf. *English* and *Kalaallisut*

- (1_E) Father *has* died. **present** *res st.*
 (2_E) We *arrived too late*. Father *had* died. **past** *result st*
 (3_E) *By the time we arrive*, Father **will** have died. **fut** *result st*
- (1_K) Ataata tuqu-sima-vu-q.
father die-prf-IND.IV-3s **dτ (now)** *rs*
- (2_K) Apuuk-ka-tta kingusinaar-pu-gut. (1_K) Ataata tuqu-sima-vu-q
arrive-FCT_T-1p be.too.late-IND.IV-1p father die-prf-IND.IV-3s **dτ (then)** *rs*
- (3_K) Apuuk-ku-tta, ataata tuqu-sima-ssa-u-q.
arrive-HYP_T-1p father die-prf-expected-IND.IV-3s **dτ** *st. of exp*
Lit. When we arrive, [I] expect Father to be (already) dead.
- (3'_K) Apuuk-ku-tta, paasi-gunar-pu-gut ataata tuqu-sima-su-q
arrive-HYP_T-1p find.out-be.likely-IND.IV-3s father die-prf-ELA₁-3s₁ **elaboration of**
Lit. When we arrive, we're likely to find that Father has died. *expected event*

• *Yukatek* (see also sample text: §1.2, §2.4, §5.3, §6.3)

- (1_Y) "Is your son still doing his homework?"
 Inw a'l-ik=e'
 1s think-ELA.TV_A.3s=TM^T *JB*
 I think... *MB*
JB
- ts'-u ts'o'k-s-ik u meyah=o'. *JB*
 TERM-A.3 end-CAUS-INC(B.3.SG) A.3 work-D2 *JB*
 PRF-3s end-cause-ELA.TV_A.3s 3s work=DT^T *MB*
 ...he has finished his work. *(JB, p. 283)*
- (2_Y) K-u k'uch-ul-o'b=e'
 v-3p arrive-ELA.IV_U.3p=TM^T *JB*
 By the time they arrived,... *MB*
JB
- ts'o'k u kim-il le chàampal=e'. *JB*
 PRF 3s die-ELA.IV_U the baby=TM^T *MB*
 ...the baby had died. *(JB, p. 284)*
- (3_Y) Sáamal óoka'nk'iin=e'
 tomorrow afternoon=TM^T *JB*
 By tomorrow afternoon,... *MB*
JB
- ts'o'k u bèet-ik le túusbèel=o' le pàal=o'
 PRF 3s do-ELA.TV_A the errand=DT^T the child=DT^T *JB*
 ...the boy will have done the errand. *MB*
(JB, p. 284)

3 LEXICAL ENTRIES FOR ONLINE UPDATE

3.1 *English*• Non-future (**d** ω -real) result state:

HAVE \rightsquigarrow [*s* | DA *s* =_{d ω} **d** α];
 -PRS \rightsquigarrow ^P[| ϑ **d** ε \subseteq _{d ω} **d** τ]; [| **d** τ \subseteq _{d ω} *d* σ];
 -PST \rightsquigarrow ^P[| **d** τ <_{d ω} ϑ **d** ε]; [| **d** τ \subseteq _{d ω} *d* σ];

die- \rightsquigarrow [*e* | *e*: DA *die*_{d ω}]
 -*prf* \rightsquigarrow [| *d* σ =_{d ω} RS *d* ε]²

• Future (e.g. expected) result state

WILL \rightsquigarrow ^P[| ϑ **d** ε < **d** ω τ]; [\mathcal{A} **d** ω τ \subseteq \mathcal{S}];
 HAVE \rightsquigarrow [| DA *d* ω σ = **d** α];

die- \rightsquigarrow [\mathcal{E} | \mathcal{E} : DA *die*]
 -*prf* \rightsquigarrow [| *d* ω σ = RS *d* ω ε]

3.2 *Kalaallisut*• Current **d** ω -real result state

die- \rightsquigarrow [*e* | *e*: DA *die*_{d ω}]
 -*prf* \rightsquigarrow [*s* | *s* =_{d ω} RS *d* ε];

-IND \rightsquigarrow ^P[| BG *d* σ <_{d ω} ϑ **d** ε]; [| **d** τ \subseteq _{d ω} *d* σ];
 -FCT_⊥ \rightsquigarrow ^P[| DA *d* σ =_{d ω} **d** α]; [| **d** τ \subseteq _{d ω} *d* σ];

• Currently **d** ω -expected result state

die- \rightsquigarrow [\mathcal{E} | \mathcal{E} : DA *die*]
 -*prf* \rightsquigarrow [\mathcal{A} | \mathcal{S} = RS *d* ω ε];

-ELA_⊥ \rightsquigarrow ^P[| DA *d* ω σ = *d* α]; [| **d** ω τ \subseteq *d* ω σ];

-*expected* \rightsquigarrow [*s* | *s*: DA *expect*_{d ω} *d* ω σ ,
^f ϑ *s* \subseteq *d* ω σ]

-IND \rightsquigarrow ^P[| BG *d* σ <_{d ω} ϑ **d** ε]; [| **d** τ \subseteq _{d ω} *d* σ];
 -FCT_⊥ \rightsquigarrow ^P[| DA *d* σ =_{d ω} **d** α]; [| **d** τ \subseteq _{d ω} *d* σ];

3.3 *Yukatek*

• Current result state

die- \rightsquigarrow [| *d* ε : DA *die*_{d ω}];
 PRF \rightsquigarrow [*s* | **d** τ \subseteq _{d ω} *s*]; [*e* | *d* σ =_{d ω} RS *e*];
 -ELA \rightsquigarrow [| BG *d* σ \subseteq _{d ω} ϑ RS *d* ε];

• Concept of (e.g., expected) result state

die- \rightsquigarrow [| *d* ω ε : DA *die*];
 PRF \rightsquigarrow [\mathcal{A} | **d** ω τ \subseteq *d* ω σ]; [\mathcal{E} | *d* ω σ = RS \mathcal{E}];
 -ELA \rightsquigarrow [| BG *d* ω σ \subseteq ϑ RS *d* ω ε];

² I assume that the RS function is constrained to ensure, e.g., that the result state of a state change (such as death) is experienced by whoever undergoes the change—i.e., in this case, [| DA *d* σ =_{d ω} DA *d* ε].

4. 'PROGRESS STATE' AS PROCESS-INTERNAL RESULT STATE

- (4_Y) T-u estàado Quintana Roo=e' JB
 OBL-3s state Quintana Roo=TM^T MB
 In the state of Quintana Roo... JB
- yàan hun-p'éel kàah nohoch be'òora=a', JB
 be.3s one-CL_β town big now=DS^T MB
 ...there's a town which is big now, ... JB
- túun p'áat-al syùudad. JB
 PRG.3s become-ELA.IV_U city MB
 ...it is becoming a city. JB
- (5_Y) Ka'ch=e' Santa Cruz de Bravo, JB
 formerly-TM^T Santa Cruz de Bravo MB
 Formerly, it was [called] Santa Cruz de Bravo... JB
- tuméen don Ignacio Bravo h tàal JB
 because/by don Ignacio Bravo IV].3s come.IV_U MB
 ...because don Ignacio Bravo came... JB
- u hets'-kunt le màaya-s-o'b way túun ba'tehil-o'b=a' JB
 3s quiet-make.ELA].TV_A the Maya-pl-pl here PRG.3p fight-ELA.IV_A-3p=DS^T MB
 ...to pacify the Maya people here who were fighting. (JB, p. 165)
- (5'_Y) Le nohoch máak=o' hach túun kim-il ka'ch-il JB
 the great man=DT^T really PRG.3s die-ELA.IV_U formerly-rn MB
 The grand old man was really dying, but... MB
- chéen ba'l=e' kaxt-a'b u ts'àak ti'. JB
 just thing=TM^T find-IND.TV_U 3s cure OBL.3s MB
 ...just then something was found that cured him.
- (5''_Y) ... kap' u p'uru's-t-ik hun-p'éel behiiga. JB
 ... BEG 3s blow-iv_A\tv_A-ELA.TV_A one-CL_β balloon MB
 ... and she began to blow up a balloon. MB
- Táan u p'uru's-t-ik=e' káa h xíik-ih. JB
 PRG 3s blow-iv_A\tv_A-ELA.TV_A=TM^T DEP] IV].3s explode-IND.IV_U MB
 While she was blowing it up, it burst. MB
- (6_Y) 'What will your brother be doing, d'you think, when we arrive?'
 Chéen k'uch-uk-o'n=e' JB
 just arrive-ELA].IV_U-1p=TM^T MB
 Just when we get there... MB
- táan u ts'íib-t-ik hun-p'éel kàarta wal=e' JB
 PRG 3s write-iv_A\tv_A-ELA.TV_A one-CL_β letter probably =TM^T MB
 ...he'll probably be writing a letter. (JB, p. 270)
- See also sample text: §1.1, §1.3, §6.4, §6.5 (pst), §3.3 (prs), §1.8 (fut).

5. ONLINE UPDATE FOR §1.1–2 OF SAMPLE YUKATEK TEXT

From: ‘Text studies: Online Update for Yukatek Maya Texts’
<http://www.rci.rutgers.edu/~mbittner/ym.html>

(•) *Speech start-up*

[w| w = r]; [el e: AG *speak up*_{dω}]; [tl t =_{dω} θdε];

reality ^τw*: • ^τe*: speech event
 | ^τt*: e*-now

(1) Once upon a time, they say, there was...³

Yàan

initial field (*if*)

be. .3s

[$\mathcal{E} k^\alpha \mathcal{E} \in \text{Dom } k^\alpha$]; ^P[| 3s $dk^\alpha\{d\}$]; [**a** a = $dk^\alpha\{d\}$];

bin

x.SAY

[**p** el (*e*: AG *say*_{dω} **p**), (AG **dε** =_{dω} DA *e*), **dε** $\subseteq_{d\omega}$ θRS *e*];

...a little rabbit...⁴

hun- -túul

initial boundary (*ib*)

one- -CL_α

[| *one*_{dΩ}(**dα**, dk^α)]; ^P[| *animate* dk^α];

chan t'u'l =e'

little *rabbit* =TM^τ

[| *small*_{dΩ}(**dα**, dk^α)]; [| *rabbit*_{dΩ} **dα**]; [tl t =_{dΩ} θRS *d*];

reality ^τw*: • ^τe*: speech event
 | ^τt*: e*-now
 •===== ^τe₁, RS_{w*} e₁: e*-spkr is told ^τp₀, remembers ^τp₀

story world $w_0 \in \tau p_0$:

• $\mathcal{E}_0 w_0$: event with $k^\alpha_{1.1}$ -small rabbit ^τa₀
 || ^τt₁ = θ_{w₀} RS $\mathcal{E}_0 w_0$: \mathcal{E}_0 -result time

³ • In any realization of \mathcal{E} , there is a k^α -animate

$\mathcal{E} \in \text{Dom } k^\alpha \quad := \quad \lambda i. \forall w \in \text{Dom } \mathcal{E}: \mathcal{E}w \in \text{Dom } k^\alpha w$

• In any realization of $d\mathcal{E}$, **a** is the k^α -animate in $d\mathcal{E}$

a = $dk^\alpha\{d\} \quad := \quad \lambda i. \forall w \in \text{Dom } d\mathcal{E}: \mathbf{a} = dk^\alpha_i w d\mathcal{E}_i w$

• In $d\omega$, *e*-agent says **p**, **dε**-speaker is the *e*-addressee, and **dε** occurs during *e*-result time

e: AG *say*_{dω} **p** $:= \lambda i. \text{say}_{d\omega i}(e, \text{AG}_{d\omega i} e, \mathbf{p})$

AG **dε** =_{dω} DA *e* $:= \lambda i. \text{AG}_{d\omega i} \mathbf{d}\epsilon_i = \text{DA}_{d\omega i} e$

dε $\subseteq_{d\omega}$ θRS *e* $:= \lambda i. \theta_{d\omega i} \mathbf{d}\epsilon_i \subseteq \theta_{d\omega i} \text{RS}_{d\omega i} e$

⁴ • In $d\Omega$, $d\alpha$ is one dk^α -animate (i.e. *a* is a dk^α and no proper part of *a* is a dk^α), and is small for dk^α

*one*_{dΩ}($d\alpha$, dk^α) $:= \lambda i. \forall w \in d\Omega_i \forall a': a' \leq d\alpha_i \wedge a' \in \text{Ran } dk^\alpha_i w \leftrightarrow a' = d\alpha_i$

*small*_{dΩ}($d\alpha$, dk^α) $:= \lambda i. \forall w \in d\Omega_i: \text{small}_w(d\alpha_i, \text{Ran } dk^\alpha_i w)$

...who was chased...⁵

túun

final field (*ff*)/ dep *ib*

PRG. (táan)

.3s (u)

[s| $\mathbf{d}\tau \subseteq_{\mathbf{d}\Omega} s$]; [$\mathcal{E}\mathcal{E}$] $d\sigma =_{\mathbf{d}\Omega} \text{RS } ^1\mathcal{E}\mathcal{E}$]; P [| 3s_{dΩ} $\mathbf{d}\alpha$]; [| DA $d\sigma =_{\mathbf{d}\Omega} \mathbf{d}\alpha$]

chuk-

dep *mf*

catch-

[\mathcal{E}] \mathcal{E} : AG *catch* DA];

+pàach+t

+try+iv_Atv_A

[| $d\exists\exists$: AG *try.to* $d\exists$]; [| DA $d\exists\exists =_{\mathbf{d}\Omega} \text{DA } d\exists$]

-a'l

-ELA.

.TV_U

[| BG $d\sigma \subseteq \text{RS } ^1d\exists\exists$]; [a] DA $d\exists\exists = \mathbf{d}\alpha$, AG $d\exists\exists = a$];

...by a hunter. ⁶

tuméen

hun-

-túul

dep *ff*

by/because

one-

-CL_α

[| AG $d\exists\exists = \mathbf{d}\alpha$]; [k^α] $one_{\mathbf{d}\Omega}(\mathbf{d}\alpha, k^\alpha)$]; P [| *animate* $\mathbf{d}\kappa^\alpha$];

h-

ts'òon

=e'

M-

hunter

=TM^T

[| *male* $\mathbf{d}\kappa^\alpha$]; [| *hunter* $\mathbf{d}\kappa^\alpha$]; [\mathcal{J}] $\mathcal{J} = \mathcal{J}\text{RS } ^{f-1}d\exists\exists$];

-
- ⁵ • In $\mathbf{d}\Omega$, $d\sigma$ is the result state of the first stage of process $\mathcal{E}\mathcal{E}$ (where $^1\mathcal{E}\mathcal{E} := \iota\mathcal{E}(\mathcal{E} \in \text{Dom } \mathcal{E}\mathcal{E} \wedge \mathcal{E} \notin \text{Ran } \mathcal{E}\mathcal{E})$)
- $d\sigma =_{\mathbf{d}\Omega} \text{RS } ^1\mathcal{E}\mathcal{E} \quad := \quad \lambda i. \forall w \in \mathbf{d}\Omega_i: d\sigma_i = \text{RS}_w [^1\mathcal{E}\mathcal{E}](w)$
- In any event realizing \mathcal{E} , the agent catches the experiencer
- \mathcal{E} : AG *catch* DA $\quad := \quad \lambda i. \forall w \in \text{Dom } \mathcal{E}\exists e: e = \mathcal{E}w \wedge \text{catch}_w(e, \text{AG}_w e, \text{DA}_w e)$
- Any realization of $d\exists\exists$ is a process whose agent tries to realize $d\exists$ during the result state of the final stage of $d\exists\exists$ ($d\exists\exists$: AG *try.to* $d\exists$)
- $d\exists\exists := \lambda i. \text{process } \langle ^1d\exists\exists_i, \dots, ^f d\exists\exists_i, d\exists_i \rangle$
- $\wedge \forall \mathcal{E} \in \text{Dom } d\exists\exists, \forall w \in \text{Dom } \mathcal{E}: \text{AG}_w \mathcal{E}w = \text{AG}_w d\exists_i w$
- $\mathcal{E}\mathcal{E}$ characterizes a process (chain of event concepts, each contingent on & during RS of the preceding concept)
- $\text{process } \mathcal{E}\mathcal{E} \quad := \quad \forall \mathcal{E} \in \text{Dom } \mathcal{E}\mathcal{E}\exists \mathcal{E}': \mathcal{E}' = \mathcal{E}\mathcal{E}(\mathcal{E})$
- $\wedge \text{Dom } \mathcal{E}' \subseteq \text{Dom } \mathcal{E}$
- $\wedge \forall w \in \text{Dom } \mathcal{E}': \mathcal{J}_w \mathcal{E}'w \subseteq \mathcal{J}_w \text{RS}_w \mathcal{E}w$
- In $d\Omega$, the experiencer of $d\exists\exists$ -process (chase) is the experiencer of $d\exists$ -event (catch)
- DA $d\exists\exists =_{\mathbf{d}\Omega} \text{DA } d\exists \quad := \quad \lambda i. \forall w \in \text{Dom } d\Omega \forall \mathcal{E} \in d\exists\exists_i: \text{DA}_w \mathcal{E}w = \text{DA}_w d\exists_i w$
- The experiencer of any realized stage of $d\exists\exists$ -process (chase) is the topical animate $\mathbf{d}\alpha$
- DA $d\exists\exists = \mathbf{d}\alpha \quad := \quad \lambda i. \forall \mathcal{E} \in d\exists\exists_i, \forall w \in \text{Dom } \mathcal{E}: \text{DA}_w \mathcal{E}w = \mathbf{d}\alpha_i$
- ⁶ • Any $\mathbf{d}\kappa^\alpha$ -animate is a hunter
- $\text{hunter } \mathbf{d}\kappa^\alpha \quad := \quad \lambda i. \forall w \in \mathbf{d}\kappa^\alpha_i, \forall a \in \text{Ran } \mathbf{d}\kappa^\alpha_i: \text{hunter}_w a$

reality $\top w^*$: •
|
•===== $\top e^*$: speech event
 t^* : e^* -now
 $e_1, RS_{w^*} e_1$: e^* -spkr is told $\top p_0$, remembers $\top p_0$

 story world $w_0 \in \top p_0$:
 • $\mathcal{E}_0 w_0$: event with $k_{1.1}^\alpha$ -small rabbit $\top a_0$
 || $\top t_1 = \mathfrak{D}_{w_0} RS \mathcal{E}_0 w_0$: \mathcal{E}_0 -result time
 • $[^1 \mathcal{E} \mathcal{E}_1](w_0)$: 1st stage of $\mathcal{E} \mathcal{E}_1$ -chase of
 $k_{1.1}^\alpha$ -small rabbit $\top a_0$ by $k_{1.2}^\alpha$ -hunter a_1
 = $s_{1.2} = RS_{w_0} [^1 \mathcal{E} \mathcal{E}_1](w_0)$:
 result state of 1st stage of $\mathcal{E} \mathcal{E}_1$ -chase

~~~~~  
 $w_1 \in \text{Dom } \mathcal{E}_1 = p_1$  (success worlds of  $a_1$ -hunter)  
 ••••••  $\langle [^1 \mathcal{E} \mathcal{E}_1](w_1), \dots [^f \mathcal{E} \mathcal{E}_1](w_1) \rangle$ :  
 hunter  $a_1$  tries to realize  $\mathcal{E}_1$ -catch during  
 result state of final stage of  $\mathcal{E} \mathcal{E}_1$ -chase  
 •  $\mathcal{E}_1 w_1$ : hunter  $a_1$  catches rabbit  $\top a_0$   
 ||  $\top \mathcal{T}_1 w_1 = \mathfrak{D}_{w_1} [^f \mathcal{E} \mathcal{E}_1](w_1)$ :  
 time of final stage of  $\mathcal{E} \mathcal{E}_1$ -chase

§1.2<sub>a</sub> He had already...

|                                                                                                                    |                  |                                |
|--------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------|
| ts'o'k                                                                                                             | túun             |                                |
| PRF                                                                                                                | then             | main <i>if</i> : dep <i>ib</i> |
| [s  dτ ⊆ <sub>dΩ</sub> dσ]; [e  dσ = <sub>dΩ</sub> RS e]; <sup>P</sup> [  dτ = <sub>dΩ</sub> ∅RS <sup>1</sup> dε]; |                  |                                |
| u                                                                                                                  |                  |                                |
| 3s                                                                                                                 |                  |                                |
| <sup>P</sup> [  3s dα]; [  DA dσ = <sub>dΩ</sub> dα];                                                              |                  |                                |
| ...got tired of running when... <sup>7</sup>                                                                       |                  |                                |
| ka'n-                                                                                                              |                  | dep <i>mf</i>                  |
| tire-                                                                                                              |                  |                                |
| [eel dε: DA get.tired.of <sub>dΩ</sub> ee];                                                                        |                  |                                |
| -al                                                                                                                |                  |                                |
| ELA.                                                                                                               | .IV <sub>U</sub> |                                |
| <sup>P</sup> [  BG dσ ⊆ <sub>dΩ</sub> ∅RS dε]; [  DA dε = <sub>dΩ</sub> dα]                                        |                  |                                |
| áalkab                                                                                                             | =e'              | dep <i>fb</i>                  |
| run                                                                                                                | =TM <sup>⊤</sup> |                                |
| [  dεε: AG run]; [  t t = <sub>dΩ</sub> ∅RS dε];                                                                   |                  |                                |

<sup>7</sup> • In  $d\Omega$ ,  $d\epsilon$  is a state change whose experiencer gets tired of  $ee$ -activity  
 $d\epsilon$ : DA get.tired.of<sub>dΩ</sub> ee     :=      $\lambda i. \forall w \in d\Omega; \exists s: \text{tired}_w(s, DA_w s) \wedge d\epsilon_i = BG_w s \wedge s = RS_w^f ee$   
 $\wedge \forall e \in ee: AG_w e = DA_w s$

reality  $\top w^*$ :  
 •  $\top e^*$ : speech event  
 |  $t^*$ :  $e^*$ -now  
 •=====  $e_1, RS_{w^*} e_1$ :  $e^*$ -spkr is told  $\top p_0$ , remembers  $\top p_0$

-----  
 story world  $w_0 \in \top p_0$ :  
 •  $\mathcal{E}_0 w_0$ : event with  $k_{1,1}^\alpha$ -small rabbit  $\top a_0$   
 ||  $\top t_1 = \vartheta_{w_0} RS \mathcal{E}_0 w_0$ :  $\mathcal{E}_0$ -result time  
 •  $[^1 \mathcal{E} \mathcal{E}_1](w_0)$ : 1st stage of  $\mathcal{E} \mathcal{E}_1$ -chase of  
 $k_{1,1}^\alpha$ -small rabbit  $\top a_0$  by  $k_{1,2}^\alpha$ -hunter  $a_1$   
 =  $s_{1,2} = RS_{w_0} [^1 \mathcal{E} \mathcal{E}_1](w_0)$ :  
 result state of 1st stage of  $\mathcal{E} \mathcal{E}_1$ -chase  
 =  $s_2 = RS_{w_0} {}^f e_{2,2}$ : rabbit  $\top a_0$  is tired of  $ee_2$ -running  
 •  $e_{2,1} = BG_{w_0} s_2$ : rab.  $\top a_0$  gets tired of  $ee_2$ -running  
 •••  $ee_2$ : rabbit  $\top a_0$  runs  
 ||  $\top t_{2,1} = \vartheta_{w_0} RS_{w_0} e_{2,1}$ :  $e_{2,1}$ -result time

~~~~~  
 $w_1 \in \text{Dom } \mathcal{E}_1 = p_1$ (success worlds of a_1 -hunter)
 ••••••••
 • $\langle [^1 \mathcal{E} \mathcal{E}_1](w_1), \dots [^f \mathcal{E} \mathcal{E}_1](w_1) \rangle$:
 hunter a_1 tries to realize \mathcal{E}_1 -catch during
 result state of final stage of $\mathcal{E} \mathcal{E}_1$ -chase
 • $\mathcal{E}_1 w_1$: hunter a_1 catches rabbit $\top a_0$
 || $\top \mathcal{T}_1 w_1 = \vartheta_{w_1} [^f \mathcal{E} \mathcal{E}_1](w_1)$:
 time of final stage of $\mathcal{E} \mathcal{E}_1$ -chase

§1.2_b ...he saw a cave and...

káa if
 DEP]
 [el e $\subseteq_{d\Omega} \vartheta RS d\epsilon$];
 t- -u ib
 TV]- -3s
 [l d $\epsilon \subseteq_{d\Omega} d\tau$]; [l AG d $\epsilon =_{d\Omega} d\alpha$, d $\alpha \neq_{d\Omega} OB d\epsilon$]; $P[l 3s_{d\Omega} d\alpha$];
 y- il- mf
 3s- see
 $P[l 3s_{d\Omega} AG d\epsilon$]; [l d ϵ : AG see $_{d\Omega} OB$];
 -ah
 -IND.
 $P[l \vartheta_{d\Omega} d\epsilon < \vartheta_{d\omega} d\epsilon$];
 -ah
 .TV_A .3s
 [bl AG d $\epsilon =_{d\Omega} d\alpha$, OB d $\epsilon =_{d\Omega} b$]; $P[l 3s_{d\Omega} d\beta$];
 hun- -p'éel sahkab =e' fb
 one- -CL β cave =TM \top
 [k β l one $_{d\Omega}(d\beta, k^\beta)$]; $P[l inanimate d\kappa^\beta$]; [l cave d κ^β]; [tl t $=_{d\Omega} \vartheta RS d\epsilon$];

§1.2_c ...went inside.

káa ff
 DEP]
 [el e $\subseteq_{d\Omega}$ ϑ RS d ϵ];

 h
 IV]. .3s
 [l d ϵ $\subseteq_{d\Omega}$ d τ]; [l DA d ϵ = $_{d\Omega}$ d α]; ^P[l 3s $_{d\Omega}$ d α];

 òok-
 enter-
 [ll l = $_{d\Omega}$ in{d β }, (d ϵ : DA enter $_{d\Omega}$ l)];

 -Ø =i
 -IND. .IV_U .3s =LC^T
^P[l $\vartheta_{d\Omega}$ d ϵ < $\vartheta_{d\omega}$ d ϵ]; ^P[l DA d ϵ = $_{d\Omega}$ d α]; ^P[l 3s $_{d\Omega}$ d α]; [ll l = d π]

reality ^Tw*:
 • • ^Te*: speech event
 | t*: e*-now
 •===== e₁, RS_{w*} e₁: e*-spkr is told ^Tp₀, remembers ^Tp₀

 story world w₀ ∈ ^Tp₀:
 • $\mathcal{E}_0 w_0$: event with k^α_{1.1}-small rabbit ^Ta₀
 || ^Tt₁ = ϑ_{w_0} RS $\mathcal{E}_0 w_0$: \mathcal{E}_0 -result time
 • [¹ $\mathcal{E}\mathcal{E}_1$](w₀): 1st stage of $\mathcal{E}\mathcal{E}_1$ -chase of
 = k^α_{1.1}-small rabbit ^Ta₀ by k^α_{1.2}-hunter a₁
 = s_{1.2} = RS_{w₀} [¹ $\mathcal{E}\mathcal{E}_1$](w₀):
 • result state of 1st stage of $\mathcal{E}\mathcal{E}_1$ -chase
 • s₂ = RS_{w₀} ^fe_{2.2}: rabbit ^Ta₀ is tired of ee₂-running
 ••• e_{2.1} = BG_{w₀} s₂: rab. ^Ta₀ gets tired of ee₂-running
 || ee₂: rabbit ^Ta₀ runs
 • t_{2.1} = ϑ_{w_0} RS_{w₀} e_{2.1}: e_{2.1}-result time
 || e_{2.2}: rabbit ^Ta₀ sees k^β₂-cave b₂
 • ^Tt_{2.2} = ϑ_{w_0} RS_{w₀} e_{2.2}: e_{2.2}-result time
 • e_{2.3}: rabbit ^Ta₀ enters the interior ^Tl₂ of cave b₂

~~~~~  
 w<sub>1</sub> ∈ Dom  $\mathcal{E}_1$  = p<sub>1</sub> (success worlds of a<sub>1</sub>-hunter)  
 ••••••  
 • ⟨[<sup>1</sup> $\mathcal{E}\mathcal{E}_1$ ](w<sub>1</sub>), ... [<sup>f</sup> $\mathcal{E}\mathcal{E}_1$ ](w<sub>1</sub>)⟩:  
 || hunter a<sub>1</sub> tries to realize  $\mathcal{E}_1$ -catch during  
 • result state of final stage of  $\mathcal{E}\mathcal{E}_1$ -chase  
 •  $\mathcal{E}_1 w_1$ : hunter a<sub>1</sub> catches rabbit <sup>T</sup>a<sub>0</sub>  
 || <sup>T</sup>T<sub>1</sub>w<sub>1</sub> =  $\vartheta_{w_1}$  [<sup>f</sup> $\mathcal{E}\mathcal{E}_1$ ](w<sub>1</sub>):  
 • time of final stage of  $\mathcal{E}\mathcal{E}_1$ -chase

## ‘Cancellation tests’: Implicature vs. anaphoric presupposition

### 1. ICONIC SEQUENCE OF EVENTS

#### (1) Bohnemeyer (2002:250)

|                               |         |         |                                             |                             |                                |    |
|-------------------------------|---------|---------|---------------------------------------------|-----------------------------|--------------------------------|----|
| Pedro-e’                      | káa     | t-u     | ts’íib-t-ah                                 | hun-p’éel                   | kàarta-e’                      |    |
| <i>Pedro</i> -TOP             | káa     | PRV-A.3 | <i>write</i> -APP-CMP(B.3.SG)               | <i>one</i> -CL.IN           | <i>letter</i> -TOP             | JB |
| <i>Pedro</i> =TM <sup>T</sup> | DEP]    | TV]-3s  | <i>write</i> -iv\TV-IND.TV <sub>A</sub> .3s | <i>one</i> -CL <sub>β</sub> | <i>letter</i> =TM <sup>T</sup> | MB |
|                               |         |         |                                             |                             |                                |    |
| káa                           | t-u     |         | ts’u’ts’-ah                                 | hun-p’éel                   | chamal.                        |    |
| káa                           | PRV-A.3 |         | <i>smoke</i> -CMP(B.3.SG)                   | <i>one</i> -CL.IN           | <i>cigarette</i>               | JB |
| DEP]                          | TV]-3s  |         | <i>smoke</i> -IND.TV <sub>A</sub> .3s       | <i>one</i> -CL <sub>β</sub> | <i>cigarette</i>               | MB |

‘Pedro wrote a letter and smoked a cigarette.’ (field work (FW):  $e_{write} < e_{smoke}$  (5 of 5))

#### (2) Bohnemeyer 2002:251

|          |     |     |                                             |                             |                                   |    |
|----------|-----|-----|---------------------------------------------|-----------------------------|-----------------------------------|----|
| Pedro-e’ | káa | t-u | ts’u’ts’-ah                                 | hun-p’éel                   | chamal-e’                         |    |
|          |     |     | <i>smoke</i> -iv\TV-IND.TV <sub>A</sub> .3s | <i>one</i> -CL <sub>β</sub> | <i>cigarette</i> =TM <sup>T</sup> | MB |
|          |     |     |                                             |                             |                                   |    |
| káa      | t-u |     | ts’íib-t-ah                                 | hun-p’éel                   | kàarta.                           |    |
|          |     |     | <i>write</i> -IND.TV <sub>A</sub> .3s       | <i>one</i> -CL <sub>β</sub> | <i>letter</i>                     | MB |

‘Pedro smoked a cigarette and wrote a letter.’ (FW:  $e_{smoke} < e_{write}$  (5 of 5))

- *Implicature story* (Bohnemeyer 1998:642)

1. The speaker introduced a *bounded* writing event ( $e_{write}$ ) & a *bounded* smoking event ( $e_{smoke}$ )  
 ---><sub>Tb</sub> (implicates, via **Tb**, ‘boundedness principle’, in F87)

2.  $e_{write}$  does not overlap  $e_{smoke}$  (charitable construal of ‘another event’ in **Tb**)

3.  $e_{write}$  was mentioned before  $e_{smoke}$

---><sub>Be orderly</sub>  
 2’.  $e_{write} < e_{smoke}$  (charitable construal of ‘Be orderly’)

- *Anaphoric presupposition story* (a la last four lectures)

Prior context or accommodation:

...[el...]

•  
 ( $e_0$ )

(1) *Pedro* =TM<sup>T</sup>  
 [a| a = *pedro*]; [t| t =<sub>d<sub>0</sub></sub> ΘRS dε];

|||||||  
 (<sup>T</sup>t<sub>1</sub> =<sub>w<sub>0</sub></sub> ΘRS e<sub>0</sub>)

DEP] TV]-3s  
 [el e ⊆<sub>d<sub>0</sub></sub> ΘRS dε]; [| dε ⊆<sub>d<sub>0</sub></sub> dτ];...

( $e_{write} ⊆_{w<sub>0</sub>}$  ΘRS e<sub>0</sub>)

*write*- -iv\TV -IND .TV<sub>A</sub>.3s *one*-CL<sub>β</sub> *letter*=TM<sup>T</sup>  
 [| dε: AG *write*<sub>d<sub>0</sub></sub>]; [b| b =<sub>d<sub>0</sub></sub> OB dε]; <sup>P</sup>[| dε <<sub>d<sub>0</sub></sub> dε]; ... .. ; [t| t =<sub>d<sub>0</sub></sub> ΘRS dε]

DEP] TV] -3s  
 [el e ⊆<sub>d<sub>0</sub></sub> ΘRS dε]; [| dε ⊆<sub>d<sub>0</sub></sub> dτ];...

( $e_{smoke} ⊆_{w<sub>0</sub>}$  ΘRS e<sub>write</sub>)

*smoke*- -IND .TV<sub>A</sub>.3s *one*-CL<sub>β</sub> *cigarette*  
 [| dε: AG *smoke*<sub>d<sub>0</sub></sub> OB]; <sup>P</sup>[| dε <<sub>d<sub>0</sub></sub> dε]; ... ..

## 2. ‘SIMULTANEOUS’ ACTIONS BY SAME AGENT

## (3) Bohmeyer (2002:252)

|                               |      |        |                                 |  |    |
|-------------------------------|------|--------|---------------------------------|--|----|
| Pedro-e'                      | káa  | h      | hàan-ih                         |  |    |
| <i>Pedro</i> -TOP             | káa  | PRV    | <i>eat</i> -CMP(B.3.SG)         |  | JB |
| <i>Pedro</i> =TM <sup>†</sup> | DEP] | IV].3s | <i>eat</i> -IND.IV <sub>A</sub> |  | MB |

|      |         |                                       |                             |                   |             |    |
|------|---------|---------------------------------------|-----------------------------|-------------------|-------------|----|
| káa  | t-uy    | uk'-ah                                | hun-p'éel                   | refrèesko         | xan.        |    |
| káa  | PRV-A.3 | <i>drink</i> -CMP(B.3.SG)             | <i>one</i> -CL.IN           | <i>soft.drink</i> | <i>also</i> | JB |
| DEP] | TV]-3s  | <i>drink</i> -IND.TV <sub>A</sub> .3s | <i>one</i> -CL <sub>β</sub> | <i>soft.drink</i> | <b>also</b> | MB |

‘Pedro ate and had a soft drink too.’ (FW:  $e_{eat}$  &  $e_{drink}$  ‘simultaneous’ (4 of 5),  
‘simultaneous or sequential’ (1 of 5))

- *Implicature story*

**Q** (MB): What’s the key difference between *writing-and-smoking*, vs. *eating-and-drinking*?

**A** (JB, 2002:251): ‘...**assumption from world knowledge** (MB: emphasis added) that writing and smoking (when involving the same participant!, see below) should not overlap. This assumption weighs much more strongly from my consultants than it probably would for Euro-American people, ...’

**MB**: Why????!!! I bet you any smoker—Yukatek or Euro-American—will tell you it’s nonsense. (If anything, it should be the other way round: physically, it’s harder to eat and drink at *strictly* the same time, than to write and smoke.)

- *Anaphoric presupposition story*:

What Yukatek consultants respond to is Yukatek morphology. Crucially, in (3), there is **no topic update** after the 1st clause. Therefore, the 2nd event is located during the *same topic time* (in FW terms: ‘simultaneous’ or ‘either order’) as the 1st. The anaphoric presupposition of *xan* ‘also’ may reinforce this resolution of the temporal anaphora.

Prior context or accommodation:

...[ $e_l$ ...][ $t_l$   $t =_{d\omega}$   $\vartheta$ RS  $d\epsilon$ ];

•■■■■■■■■■■  
 $(e_0, {}^T t_0 =_{w0} \vartheta$ RS  $e_0)$

(3) *Pedro* =TM<sup>†</sup>  
[ $a$   $a = pedro$ ]; [ $t_l$   $t =_{d\omega}$   $\vartheta$ RS  $d\epsilon$ ];

DEP] **IV].** .3s  
[ $e_l$   $e \subseteq_{d\omega}$   $\vartheta$ RS  $d\epsilon$ ]; [ $d\epsilon \subseteq_{d\omega}$   $d\tau$ ]; ...

$(e_{eat} \subseteq_{w0} \vartheta$ RS  $e_0)$

*eat*- -IND .IV<sub>A</sub>.3s  
[ $d\epsilon$ : AG  $eat_{d\omega}$ ]; <sup>P</sup>[ $d\epsilon <_{d\omega}$   $d\epsilon$ ]; ...

DEP] **TV].** -3s  
[ $e_l$   $e \subseteq_{d\omega}$   $\vartheta$ RS  $d\epsilon$ ]; [ $d\epsilon \subseteq_{d\omega}$   $d\tau$ ]; ...

$(e_{drink} \subseteq_{w0} \vartheta$ RS  $e_0)$

*drink*- -IND .TV<sub>A</sub>.3s *one*-CL<sub>β</sub> *soft.drink*  
[ $d\epsilon$ : AG  $drink_{d\omega}$  OB]; <sup>P</sup>[ $d\epsilon <_{d\omega}$   $d\epsilon$ ]; ... ..

**also**

<sup>P</sup>[ $d\epsilon_1 \subseteq_{d\omega}$   $d\tau$ ]

## 3. ‘SIMULTANEOUS’ ACTIONS BY DIFFERENT AGENTS

## (4) Bohnemeyer (2002:252)

|                      |         |                                     |                               |                     |                       |    |
|----------------------|---------|-------------------------------------|-------------------------------|---------------------|-----------------------|----|
| káa                  | t-u     | ts'íib-t-ah                         | hun-p'éel                     | kàarta              | Pedro=e'              |    |
| káa                  | PRV-A.3 | write-APP-CMP(B.3.SG)               | one-CL.IN                     | letter              | Pedro=TOP             | JB |
| DEP]                 | TV]-3s  | write-iv\TV-IND.TV <sub>A</sub> .3s | one-CL <sub>β</sub>           | letter              | Pedro=TM <sup>†</sup> | MB |
| Juan=e'              | káa     | t-u                                 | ts'u'ts'-ah                   | hun-p'éel           | chamal.               |    |
| Juan-TOP             | káa     | PRV-A.3                             | smoke-CMP(B.3.SG)             | one-CL.IN           | cigarette.            | JB |
| Juan=TM <sup>†</sup> | DEP]    | TV]-3s                              | smoke-IND.TV <sub>A</sub> .3s | one-CL <sub>β</sub> | cigarette             | MB |

‘Pedro wrote a letter and Juan smoked a cigarette.’ (FW: ‘simultaneous’ (4 of 5))

• *Implicature story*

JB (2002:251): ‘...assumption from world knowledge that writing and smoking (**when involving the same participant!**, see below) should not overlap....’

MB: For smoking and writing, I still don’t see the difference between one agent or two.

• *Anaphoric presupposition story:*

Crucially, in (4), there are **two topic updates** after the 1st clause. The second one may *reset* the topic time, so that the 2nd event is again located in the *same topic time* as the 1st. Since the 2nd topic update would otherwise be pointless, it may favor this resolution of the temporal anaphora.

Prior context or accommodation:

...[el...][t t =<sub>d<sub>0</sub></sub> θRS dε]; •|||||||  
(e<sub>0</sub>, <sup>†</sup>t<sub>0</sub> =<sub>w<sub>0</sub></sub> θRS e<sub>0</sub>)

(4) DEP] TV]-  
 [el e ⊆<sub>d<sub>0</sub></sub> θRS dε]; [l dε ⊆<sub>d<sub>0</sub></sub> dτ]; (e<sub>write</sub> ⊆<sub>w<sub>0</sub></sub> θRS e<sub>0</sub>)

-3s  
<sup>P</sup>[l 3s dα]; [l dα =<sub>d<sub>0</sub></sub> AG dε]; (if last S about Pedro)  
<sup>P</sup>[l 3s ...]; [l ... =<sub>d<sub>0</sub></sub> AG dε]; [al a =<sub>d<sub>0</sub></sub> AG dε]; (otherwise)

write- -iv\TV -IND .TV<sub>A</sub>.3s one-CL<sub>β</sub> letter  
 [l dε: AG write<sub>d<sub>0</sub></sub>]; [bl b =<sub>d<sub>0</sub></sub> OB dε]; <sup>P</sup>[l dε <<sub>d<sub>0</sub></sub> dε]; ... ..

Pedro =TM<sup>†</sup>  
 [l dα =pedro]; [t t =<sub>d<sub>0</sub></sub> θRS dε]; (<sup>†</sup>t<sub>1</sub> =<sub>w<sub>0</sub></sub> θRS e<sub>write</sub>)

Juan =TM<sup>†</sup>  
 [al a =juan]; [t t =<sub>d<sub>0</sub></sub> θRS dε<sub>1</sub>]; (<sup>†</sup>t<sub>2</sub> =<sub>w<sub>0</sub></sub> θRS e<sub>0</sub>)

-3s  
<sup>P</sup>[l 3s dα]; [l dα =<sub>d<sub>0</sub></sub> AG dε];

DEP] TV]  
 [el e ⊆<sub>d<sub>0</sub></sub> θRS dε]; [l dε ⊆<sub>d<sub>0</sub></sub> dτ]; (e<sub>smoke</sub> ⊆<sub>w<sub>0</sub></sub> θRS e<sub>0</sub>)

smoke- -IND .TV<sub>A</sub>.3s one-CL<sub>β</sub> cigarette  
 [l dε: AG smoke<sub>d<sub>0</sub></sub> OB]; <sup>P</sup>[l dε <<sub>d<sub>0</sub></sub> dε]; ... ..