When going means becoming gone: Framing Motion as State Change in Yukatek Maya
J. Bohnemeyer – Second (first complete) draft 05-May-2003 – Comments most welcome – Please don't quote!

1. Introduction

Theoretical and typological work on the encoding of Motion in language (e.g. Jackendoff 1983, Talmy 2000) has assumed that Motion is predominantly represented in language as what may be termed 'Translational Motion' (henceforth T-Motion), i.e., as a homomorphic mapping from the time course of the Motion event into the 'Path', the extent of Space traversed by the moving 'Figure'. It has been known for a long time that a significant number of types of Motion events could be framed alternatively in terms of Change of Location (henceforth CoL) (e.g., Dowty 1979, Miller & Johnson-Laird 1976), breaking them down into State Change event structures and Locative relations that characterize their beginning or end states (rendering, e.g., the meaning of *go under the table* as something like 'come to be/end up under the table', or the meaning of *leave the house* as 'cease to be inside the house', or 'end up outside the house', etc.). Jackendoff (1983: 170-174; 1990: 91-95) argues against a general reduction of T-Motion semantics to CoL and makes a case for the event type of T-Motion (represented by the conceptual predicate GO in his approach) and the set of five basic Path functions TO and FROM (for 'Bounded Paths'), VIA (with 'Routes'), and TOWARD and AWAY-FROM (with 'Directions') as universal primitives of semantics (in Jackendoff's terms, primitives of 'Conceptual Structure').

This article presents evidence suggesting that in Yukatek, a Mayan language of Mexico and Belize, Motion is consistently represented as CoL. Verbal projections that may be used in reference to Motion events must be headed by CoL verbs. The Ground-denoting adjuncts these combine with do not encode Path relations; instead, the Grounds they encode are interpreted in accordance with the semantics of the particular CoL verb as Grounds of the Locative relations that characerize the source or target state of the CoL event. As is to be expected, these lexicalization patterns have different repercussions for the encoding of CoL events corresponding to different types of Paths. Thus, there is only a single CoL verb, *máan* 'pass', for all types of CoL events involving Route Paths (defined by VIA Grounds positioned on the Path between Source and Goal). In combination with the lack of Path distinctions in Ground-denoting phrases, this yields a high amount of underspecification compared to Indo-European languages. For instances, in combination with *óok'ol* 'on', *máan* 'pass' may convey equivalents of *over the hill*, *along the (top of the) wall*, or *across the road*, without any formal distinction.

Since Direction specifications do not entail CoL, Direction is not lexicalized at all in Yukatek. The same Ground-denoting adjuncts that, depending on the verb they are combined with, may have AT, FROM, TO, or VIA readings are also compatible with TOWARD and AWAY-FROM readings. But since there are no verbs that lexicalize Direction, Direction specifications are never unambiguous, except in combination with the indexical verbs *bin* 'go', *tàal* 'come', and *u'l* 'return (to deictic center)'. These verbs entail CoL wrt. the deictic center or some anaphorically traced Place, so when they occur with Ground-denoting phrases, these cannot be interpreted as expressing 'Bounded Path' or Route Grounds, and are thus understood to encode Directions.

Perhaps the most dramatic effects occur in the encoding of multi-Ground Paths. Since Ground-denoting phrases do not express Path relations, their roles in CoL events being assigned exclusively by the verb instead, and there are no constructions that integrate multiple CoL-denoting verbal projections in single clauses, events of T-Motion along multi-

Ground Paths have to be broken down into sequences of CoL events each of which involve only a single Ground. For instance, an event of T-Motion from Source to Goal has to be segmented into a departure and and arrival event, each of which is encoded in a separate clause, leaving the Path traversed by the Figure between Source and Goal to implicature.

If there is one effect that may be considered the hallmark of framing T-Motion as CoL, it is the applicability of CoL predications in the absence of T-Motion. Kita (1999) shows that the Japanese verbs *hairu* and *deru*, commonly glossed as ENTER and EXIT, only lexicalize CoL with the target Location being inside and outside the Ground, respectively, without entailing T-Motion of the Figure. Thus, the verbs are also applicable in reference to events in which the Ground moves while the Figure remains stationary; events in which the Ground emerges or disappears around the stationary Figure; and events in which the Figure emerges or disappears inside the Ground. Yukatek shows similar phenomena on a broader scale, i.e. not restricted to ENTER/EXIT-type events. Under certain conditions, descriptions headed by verbs expressing 'enter', 'exit', 'ascend', 'descend', or 'pass' behave like descriptions with *hairu*/*deru* in Japanese. Thus, if the Ground moves instead of the Figure, or the Figure teleports into or out of configuration with the Ground, descriptions headed by a CoL verb with a Figure subject are still applicable to the event, provided a strong implicature to the effect that the Figure moves is explicitly cancelled. Acceptance further increases if the CoL verb is not used in reference to the event itself, but instead a resultative or perfect form of the verb is used in reference to the target state of the CoL event.

A final consequence of the framing of T-Motion as CoL is the lack of 'Fictive Motion' metaphors in the sense of Talmy (1996). English has a wealth of such expressions in which a Path relation is exploited for the metaphorical denomination of some stative spatial relation or configuration, e.g. in the encoding of extent (*This road leads from Nijmegen to Arnhem*), orientation (*The house is facing away from the forest*), or Location (*Michael's office is across the corridor*). Yukatek makes very limited use of what may be called 'Fictive CoL' (cf. Matsumoto 1996), in locutions such as 'This road leaves from Nijmegen, and it extends as far as Arnhem'. There is no metaphorical encoding of Path relations, as there is no literal encoding of Path relations.

The article is organized as follows: Section 2 provides background information on the language. Section 3 sketches the grammar of CoL, focussing on the formal and semantic properties of the verbs that head CoL-denoting projections, the prepositions and relational nouns that head Ground-denoting phrases, and the constructions that combine these two categories of expressions. Section 4 gives a detailed account of how the expressions introduced in section 3 are used in the encoding of simple CoL events involving single Grounds. The following section discusses how T-Motion events involving multi-Ground Paths are segmented across stretches of discourse. Section 6 deals with the predication of CoL under lack of Figure Motion, and section 7 presents the evidence from the absence of Fictive Motion metaphors. The results of the study are summarized in section 8, and some typological and theoretical implications are considered.

2. Background on Yukatek

Yukatek belongs to the Yukatekan branch of the Mayan language family, along with the closely related sister languages Lakandón, Itzá, and Mopán. Yukatek is spoken by close to 800.000 people living all across the Yucatán peninsula: in the Mexican states of Campeche, Quintana Roo, and Yucatán; in northern Belize, and in some villages of the Petén province of Guatemala. In line with Edmonson 1986 and Pfeiler 1995, it is assumed here that at least two dialects of Yukatek may be distinguished, an eastern and a western variety (a detailed dialect

survey is currently being conducted by a group of national and international scholars). The border between these would run roughly north-south through the states of Yucatán and Campeche. The two dialects are fully mutually intelligible; the differences concern mainly (morpho-)phonology and lexical items, but also a few function words. The data presented in this article were collected in the village of Yaxley in central Quintana Roo, i.e. represent the eastern variety.

The bulk of the work reported on here was conducted in annual field trips between 1995 and 2002. The main informants were six adult native speakers, one woman (age 28 in 2002) and five men (between age 25 and 54 in 2002). Like all speakers of their age group in Mexico, these are fluently bilingual in Spanish. They acquired Spanish as a second language, chiefly at school, and use it above all when conducting business in the municipal capital Felipe Carrillo Puerto. All six consultants grew up in extended-family households that practice slash-and-burn corn farming, mostly for subsistence; four of the consultants now lead their adult lifes in corn farming households, while the remaining two (a couple) have moved to the town of Felipe Carrillo Puerto. Four of the five men have spent several years of their lifes outside the village.

Like all Mayan languages, Yukatek is a polysynthetic language. It is an exclusively head-marking language, shows productive incorporation of nouns and adverbs into the verbal complex and productive verb compounding, and has rich valence changing morphology that adapts verb roots to clause structures which they are not lexically equipped to enter. Core arguments are marked by two paradigms of cross-reference markers, the 'Set A' clitics and the 'Set B' suffixes, using the labels customary in Mayan linguistics. Table 1 lists the two sets and their functions:

	SET A		SET B	
Forms	Singular	Plural	Singular	Plural
1st	*in(w)=*	*k=(...-o'n)*	*-en*	*-o'n*
1st inclusive	n.a.	*k'...-o'n-e'x*	n.a.	*-o'n-e'x*
2nd	*a(w)=*	*a(w)= (...)-e'x*	*-ech*	*-e'x*
3rd	*u(y)=*	*u(y)= (...)-o'b*	*-Ø / -ih*	*-o'b*
Functions	A; Possessor; S in verbal cores with inclompletive status		U; S in stative clauses; S in verbal cores with completive or subjunctive status	

Table 1. *Yukatek cross-reference markers*

Core arguments are identified in Table 1 by the labels 'S' (for the single core argument of intransitive verbs and stative predicates), 'A' (for transitive-clause arguments receiving an 'actor' 'macro-role'), and 'U' (for transitive-clause arguments receiving an 'undergoer' macro-role), following Van Valin & LaPolla 1997. In all instances, syntactically optional argument noun phrases add lexical content to the variables opened up in the discourse representation by the cross-reference markers; pragmatically, they are needed in particular when new referents are introduced or for disambiguation. Stative clauses may be constituted by stative predicates alone, in combination with set-B suffixes marking their 'theme' arguments. (1) illustrates (relational) nouns as predicates, with set-A clitics marking their possessors. (2) shows an adjectival predicate.[1]

[1] The orthographic representation in this article is morphemic rather than morpho-phonemic. The orthography applied is based on Lehmann (1998). In the interlinear morpheme glosses, the following

(1) Síi **in=ìiho-ech**, **in=pàal-ech**, ko'x!
yes **A.1.SG=son-B.2.SG** **A.1.SG=child-B.2.SG** EXHORT
'**You're my son** alright, **you're my child**; let's go!' (HIJO 129)

(2) Chan=áak, **óotsil-ech**!
DIM=turtle **poor-B.2.SG**
'Little turtle, **you are poor**!' (Romero Castillo 1964: 307)

All stative predications have this structure. With predications of existence (3), location (4), and possession (5), the set-B suffixes attach to the dedicated stative existential predicate *yàan*:

(3) **Yàan** **káanal** te'l pàach-il=o'.
EXIST(B.3.SG) **canal** there back-REL=D2
'**There's a canal** there behind (the mound in front of us).' (Hanks 1990: 128)

(4) **Tu'x** **yàan-ech**, chan=áak?
where **EXIST-B.2.SG** DIM=turtle
'**Where are you**, little turtle?' (Romero Castillo 1964: 308)

(5) **Yàan** tèech **tsíimin**?
EXIST(B.3.SG) you **horse**
'Do you **have a horse** (lit. does a horse exist on you)?' (BVS 5.1.24)

Locative predications may also be headed by stative forms of 'dispositional' verb roots:

(6) **Ti'=k'at-akbal** y=óok'ol u=chùun le=che'=o'.
LOC=cross-DIS(B.3.SG) A.3=on A.3=start\ATP DET=tree=D2
'There [the stick] **is across** on top of the tree's stump.' (PosB 61 SBM)

Dispositional forms are produced from dispositional or transitive roots. There are between 100 and 150 such roots. These lexicalize stage-level spatial properties such as shape (e.g. 'bulge'), disposition (e.g. 'be drooped'), distribution (e.g. 'be spread out'), configuration (e.g. 'be between two things'), posture (e.g. 'sit'), and orientation (e.g. 'lie face up'). In locative

---

conventions are used: '-' for affixes; '=' for clitics; '+' for compounding; '/' for subsegmental realization or infixation. Abbreviations in the glosses include the following: 1 – 1st person; 2- 2nd person; 3 – 3rd person; A – set-A cross-reference clitics; ACAUS- anticausative derivation; AN – animate (numeral classifier); APP – applicative derivation; ATP – antipassive derivation; B – set-B cross-reference suffixes; CAUS – causative derivation; CL – numeral/possessive classifier; CMP – completive status; COMP – comparative particle; CON – narrative concatenation particle; D1 – proximal/exophoric deictic particle; D2 – distal-deictic/anaphoric particle; D3 – textual deictic particle (= TOP); D4 – anaphoric place particle; DIM – diminutive particle; DIS – dispositional verb class; DET – definite determiner; EXIST – existential/locative/possessive predicate; F – feminine noun class prefix; GIV – gerundive derivation; IMPF – imperfective aspect; IN – inanimate (numeral classifier); INC – incompletive status; INTENS – intensifier particle; IRR – irrealis modality; LOC – generic preposition; NEG – negation; OBL – obligative modality; PASS – passive derivation; PROC – inchoative verb class; PL – plural; PROG – progressive aspect; PRS – present tense (Spanish); PRSV – presentative predicate; PRT – preterite (Spanish); PRV – perfective aspect; REL – relational derivation (nouns); REP – repetitive/reversative particle; RES – resultative derivation; SG – singular; SPONT – "spontaneous" derivation (variant of anticausative); SR – subordinator; SUBJ – subjunctive status; TERM – terminative aspect; TOP – topic marker.

predications, dispositional predicates are preferred whenever such properties are pragmatically "at issue"; otherwise, the strategy in (4) is chosen by Default.

Verbs head maximal syntactic projections called 'verbal cores' here, following Lehmann (1993b). Verbal cores may be embedded as adjuncts or as complements of propositional verbs. To constitute clauses, verbal cores must be combined with preverbal 'aspect-mood' (AM) markers. In both cases, verbal cores are marked for a category of Mayan grammar called 'status' by Kaufman 1990, which in Yukatek combines aspectual (perfective vs. imperfective), modal ('assertive' vs. 'non-assertive'; cf. Bohnemeyer 2002), and illocutionary meanings. Through allomorphic variation, five classes of verb stems are distinguished, such that each class has a unique set of status suffixes:

Status category Verb class	Incompletive	Completive	Subjunctive	Imperative
Active	*-Ø*	*-nah*	*-nak*	*-nen*
Inactive	*-Vl*	*-Ø*	*-Vk*	*-en*
Inchoative	*-tal*	*-chah*	*-chahak*	n.a.
Dispositional	*-tal*	*-lah*	*-l(ah)ak*	*-len*
Transitive active	*-ik*	*-ah*	*-Ø / -eh*	*-Ø / -eh*
passive[2]	*\'/...-Vl* */ -a'l*	*\'/...-ab* */ -a'b*	*\'/...-Vk* */ -a'k*	n.a.[3]

Table 2. *YM status inflection according to verb classes*

The five verb stem classes are also distinguished by transitivity alternations and valence-changing derivations; cf. Bohnemeyer (2002, to appear), Krämer & Wunderlich (1999), Lehmann (1993a), and Lucy (1994). Aside from the four status categories listed in Table 2, there is a fifth one, which however only occurs in certain focus constructions. The status category a verbal core is marked for depends on the construction and matrix predicate in embedded cores and on the AM marker in main clauses. (7) illustrates the imperfective AM marker *k-*, which governs incompletive status on the verb. Perfective AM, as in (8), triggers completive status inflection.

(7) a. **k-u**=kim-**il**
IMPF-A.3=die-**INC**
'he dies'

b. **k-u**=hats'-**ik-en**
IMPF-A.3=hit-**INC-B.1.SG**
'he hits me'

(8) a. **h-**kim-**ø-ih**
PRV-die**(CMP)-B.3.SG**
'he died'

b. **t-u**=hats'-**ah-en**
PRV-A.3=hit-**CMP-B.1.SG**
'he hit me'

Yukatek has a split intransitive system of argument marking. The S argument of intransitive cores is cross-referenced by the set-A clitics in incompletive status, as in (7a), and by the set-

[2] Passive stems are morphologically intransitive and should thus probably be considered a verb stem class in their own right. The status pattern of passive stems is an extension of the inactive pattern.

[3] Inchoative and passive stems do not inflect for imperative status. When such stems occur as main verbs in commands, they are marked for subjunctive status instead.

B suffixes elsewhere, as in (8a). As a comparison of (7b) and (8b) shows, transitive cores are not affected by the split. See Bohnemeyer (to appear) and Krämer & Wunderlich 1999 for analyses.

There is no comprehensive reference grammar of Yukatek according to contemporary standards. However, detailed descriptions of nominal and verbal morphology can be found in Blair (1964), Ayres & Pfeiler (1997), and Bricker *et al.* (1998). Bricker *et al.* submit a comprehensive scientific dictionary of the western variety. Lehmann (1998) provides a detailed analysis of possessive constructions. The Yukatek grammar of predicate argument structure has been studied by Bohnemeyer (2002, to appear), Krämer & Wunderlich (1999), Lehmann (1993a), Lucy (1994), and Straight (1976), among others. Studies of spatial semantics include Bohnemeyer (1997), Bohnemeyer (in press), Bohnemeyer (in prep.), Bohnemeyer & Brown (in prep.), Bohnemeyer & Stolz (in prep.), Goldap (1992), Hanks (1990), and Lehmann (1992). Bohnemeyer (2002) and Vapnarsky (1999) give exhaustive accounts of the expression of temporality in Yukatek.

3. The grammar of change of location (CoL)

3.1. The structure of CoL-denoting verbal cores

CoL is expressed exclusively in verbal cores headed by verb stems of the inactive, inchoative, or transitive classes (there is in fact at least one exception, *sùut* '(re)turn'; cf. section 3.3). For instance, the transitive stem *hóok'-s* 'cause to exit', 'extract' in (10) is produced by causative derivation from the inactive root *hóok'* 'exit' in (9):

(9**)** Le=kàaro xan=o' h-**hóok'** xan ich le=kàaha=o'.
DET=cart also=D2 PRV-**exit**(B.3.SG) also in DET=box=D2
'The cart as well, it left the box (lit. exited in the box), too.' (Motelic EMB 28)

(10) T-a=**hóok'-s**-ah le=chan kàaro
PRV-A.2=**exit-CAUS**-CMP(B.3.SG) DET=small cart

ich-il le=kàaha=o'.
in-REL DET=box=D2

'You made the little cart leave the box (lit. exit in the box).' (Motelic EMB 24)

As in these two examples, inactive verbs express uncaused CoL, whereas transitive verbs are predominantly used to express caused CoL (see section 3.2). Active intransitive verbs are employed in motion event descriptions to denote 'manners of motion' (Talmy 2000 Vol. I). An example is *xíiknal* 'flutter', 'fly (in the manner of birds)' in (11)-(13):

(11) Le=ch'íich'=o' túun **xíiknal** y=óok'ol le=che'=o'.
DET=bird=D2 PROG:A.3 **fly** A.3-top DET=wood=D2
'The bird is flying [i.e. circling!] above the tree.' (fieldnotes)

(12) Le=ch'íich'=o' **xíiknal**-il h-úuch uy=em-el
DET=bird=D2 **fly**=REL PRV-happen(B.3.SG) A.3=descend-INC

te=che'=o'.
LOC:DET=wood=D2

'The bird flew down from the tree [lit. flyingly (is how) it happened to descend wrt. the tree].' (fieldnotes)

(13) Le=ch'íich'=o' h-em u=**xíiknal** te=che'=o'.
DET=bird=D2 PRV-descend(B.3.SG) A.3=**fly** LOC:DET=wood=D2
'The bird flew down from the tree [lit. it descended flying wrt. the tree].' (fieldnotes)

In verbal cores headed by manner verbs, as in (11), Ground-denoting adjuncts merely refer to the location of the event denoted by the manner verbs; CoL is neither entailed nor implicated by such structures. To encode manners of CoL 'Macro-events' (Talmy 2000 Vol. II), manner verbs must be combined with CoL-denoting verbs, such as *em* 'descend' in (12)-(13). In other words, Yukatek is a 'verb-framed' language on Talmy's typology of lexicalization patterns. There are two constructions that are both used regularly to integrate manner information in CoL clauses: the 'manner focus' construction exemplified in (12), in which the CoL-denoting verbal core is subordinate to the manner predicate in a cleft-like structure, and the 'gerundial' construction, illustrated in (13), in which the manner-denoting core is embedded as an adjunct.

As laid out in section 3.2, ground-denoting expressions do not formally reflect the role of the Ground in the CoL event – motion Grounds are not marked for whether they receive TO, FROM, VIA, or AT functions. The roles of the Grounds in the CoL event are assigned by the event structure of the predicate alone. As a consequence, it is not possible to refer to more than one Ground in a single verbal core.[4] Consider (14), an unacceptable rendition of the scenario in Figure 1-2:

Figure 2. *First frame of ECOM B4*

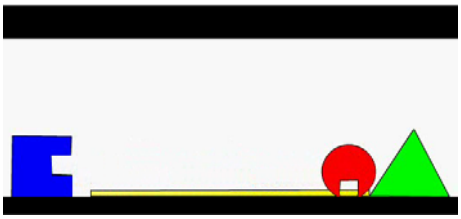

Figure 1. *Last frame of ECOM B4*

(14) *Le=síirkulo=o' h-**bin** **t-uy=iknal** **le=kwadràado**
DET=circle=D2 PRV-**go**(B.3.SG) **LOC-A.3=at** **DET=square**

y=óok'ol **le=che'** **y=iknal** **le=triàangulo=o'.**
A.3=on **DET=wood** **A.3=at** **DET=triangle=D2**

(Intended: 'The circle, it went from the square over the plank to the triangle'; but the only interpretation actually available would be something like 'The circle, it went at the square on the plank at the triangle'.) (ECOM B4 EMB)

[4] There is one exception: the indexical CoL verbs *bin* 'go', *tàal* 'come', and *u'l* 'return' may take Direction-denoting adjuncts in addition to their inherent indexical Grounds; cf. section 3.2.

Structures like (14) are plain gibberish. The consultant who was confronted with (14) corrected me as follows:

(15) Le=chan síirkulo chak=o' k-u=**luk'**-ul u=balak'
DET=DIM circle red(B.3.SG)=D2 IMPF-A.3=**leave**-INC A.3=roll
'The little circle, it left rolling'

y=iknal le=chan kwáadrado áasul=o'; k-u=**máan** u=balak'
A.3=at DET=DIMsquare blue(B.3.SG)=D2 IMPF-A.3=**pass** A.3=roll
'at the little blue square; it passed rolling'

xan **y=óok'ol le=chan che' k'an=o';** k-u=**náak**-al
also **A.3=on DET=DIM wood yellow(B.3.SG)=D2** IMPF-A.3=**reach**-INC
'also on the little yellow plank; it reached'

u=balak' **ti' te'l y=iknal le=chan triàangulo=o'**.
A.3=roll **LOC there A.3=at DET=DIM triangle=D2**
'rolling there at the little triangle.' (ECOM B4 EMB)

In (15), the three CoL events of Figure 1-2 (FROM the square, VIA the plank, and TO the triangle) are distributed across three independent clauses, each headed by a different inactive CoL verb. Many languages have 'serial-verb' or 'multi-verb' constructions that combine multiple CoL-denoting verbal projections in single clauses (see e.g. Enfield (this issue), Essegbey (this issue)) such that these clauses permit a semantic integration of a sequence of CoL subevents into a complex CoL Macro-event. Yukatek has no such constructions. There are two clause-level constructions that may embed CoL cores in adjunct positions: the 'gerundial' construction, already illustrated with an embedded manner verb in (13), and the 'motion-cum-purpose' construction.[5] Whereas the gerundial construction encodes simultaneity of the events denoted by the two verbal cores, the motion-cum-purpose construction encodes the second event as a "purposive goal" of the first (the construal is the same as in English *He went shopping/to get a haircut*). (16) illustrates a gerundial construction with an embedded core headed by *sáat* 'become lost', 'disappear'; (17)-(18) show motion-cum-purpose constructions headed by *k'al* '(en)close' and *na'k* 'ascend', respectively.[6]

(16) …káa=h-**bin** **u=sáat-al**.
CON=PRV-**go**(B.3.SG) **A.3=lose\ACAUS-INC**
'… and it went disappearing.' (ENTER_EXIT 06 RMC)

(17) Le=sìirkulo=o' h-**bin** **u=k'al** **le=bòola=o'**.
DET=circle=D2 PRV-**go**(B.3.SG) **A.3=close(SUBJ)(B.3.SG) DET=ball=D2**
'The circle, it went to enclose the ball.' (ENTER_EXIT 03 EMB)

---

[5] 'Motion-cum-purpose' constructions are common among Mayan languages. The term was apparently introduced by Aissen (1987). Zavala (1993) provides an overview of the distribution in the language family and discusses various grammaticalization processes that take off from this construction.

[6] The formal differences between the two constructions are subtle, having to do with status marking and control of the S or A argument in the embedded core; cf. Bohnemeyer 2002: 98-101.

(18) …káa=h-**bin** **na'k-al** ka'=téen y=óok'ol le=che'=o'.
CON=PRV-**go**(B.3.SG) **ascend-INC** two=CL.times A.3=on DET=wood=D2
'…it went to go up again onto the piece of wood.' (FIGURE_GROUND 04 RMC)

Both constructions require CoL verbs to head the matrix core; both constructions permit the embedded core to be headed by a CoL predicate as well. However, it is impossible in these constructions to specify a CoL Ground in the matrix core; apparently, the embedded core itself occupies the very slot that would otherwise be reserved for a Ground-denoting adjunct.[7]

Yukatek has thus no clause-level constructions that permit the encoding of CoL wrt. to more than a single Ground. This has the effect, to be discussed in more detail in section 5, that it is impossible to semantically represent multiple CoL events as parts of a single 'Macro-event'. By the same token, any Path that consists of more than one Ground must be broken down into individual Grounds. What is semantically encoded of complex Paths is the individual Location changes wrt. the individual Grounds; the Figure's trajectory in between these Grounds does not become part of semantic representations in Yukatek. Hence, translational motion as a homomorphic mapping from time into a spatial trajectory is arguable not encoded at all in Yukatek.[8]

3.2. The structure of Ground-denoting expressions

Spatial Grounds are construed as Place functions in Yukatek (cf. Jackendoff 1983, 1990). There is only one possible exception to this generalization, namely transitive verbs that take spatial objects as themes linked to U-arguments (cf. section 2). One example is *k'al* 'enclose' in (17) above; another is *ch'(à)ak-t* '(cut a)cross', 'scar' in (19):

(19) …káa=t-u=**ch'àak-t**-ah **le=chan ha'=o'**.
CON=PRV-A.3=**cut\ATP-APP**-CMP(B.3.SG) **DET=DIMwater=D2**
'… it crossed (lit. 'cut', 'scarred') the little river.' (PATHS 03 EMB)

Semantically, the object that is pragmatically understood as Ground undergoes change of state in such constructions; hence, it is arguably not really treated as a Ground at all at the level of lexical semantics. However, constructions of this kind play a quite marginal role in Yukatek expressions of CoL.[9]

Various expressions lexically denote Place functions; e.g. toponyms (20), deictic or anaphoric Place adverbs (21), and the pro-form *tu'x* 'where (to/from)' (22):

---

[7] Besides, the two constructions are also semantically ill-equipped for the encoding of complex CoL Macro-events, as the gerundial requires simultaneity of the two subevents and the motion-cum-purpose construction does not entail realization of the subevent denoted by the embedded core.

[8] This goes with the exception of spatially extended Figures or Grounds, e.g. a convoy of vehicles entering a town – here of course, an entailment arises that the convoy enters incrementally (i.e. in successive parts), and that the convoy as a whole covers successive parts of a trajectory leading from somewhere on the town's perimeter to some place inside where the first vehicle has moved by the time the last vehicle enters.

[9] Note that applicative transitivization, the only process that can "promote" adjunct participants to U function (see section 2), is inapplicable to the inactive CoL verbs discussed in section 3.3, which head perhaps about 80% of all CoL-denoting cores in Yukatek (based on informal preliminary counts).

(20) Le=kamyòono=o', káa=h-luk' **Chiapas**=e',
DET=bus=D2 CON=PRV-leave(B.3.SG) **Chiapas**=D3

káa=h-máan **Tabasco**=e', káa=h-k'uch **Quintana Roo**.
CON=PRV-pass(B.3.SG) **Tabasco**=D3 CON=PRV-arrive(B.3.SG) **Quintana Roo**

'The bus, it left Chiapas, it passed Tabasco, it arrived (in) Quintana Roo.'
(Toponyms NMP)

(21) Ts'a' le=ba'l **te'l**=o'!
give/put(B.3.SG) DET=thing **there**=D2
'Put that thing down there!' (Hanks 1990: 438)

(22) **Tu'x** a=tàal-e'x?
where A.2=come-2.PL
'Where are you all coming from?' (BVS 2.1.9)

Note that in none of these cases is the Ground-denoting expression specified for the Path function the Ground has in the CoL or Locative predication; thus, the toponyms in (20) have FROM, VIA, and TO functions, respectively. The same holds for cardinal Direction terms such *chik'in* '(in/to/from the) west', cf. (23):

(23) Pedro=e' h-bin **chik'in/nohol**.
Pedro=D3 PRV-go(B.3.SG) **west/south**
'Pedro, he went west/south.' (Toponyms NMP)

When the Ground is denoted by a common noun, the Place function is assigned to it by a preposition or a 'Relational Spatial Nominal' (N_{Srel}). There is arguably only one genuine spatial preposition, namely *ich* 'in'.

(24) a. Le=kàaro=o' ti' yàan **ich / ti'** **le=kàaha=o'**.
DET=cart=D2 LOC EXIST(B.3.SG) **in / LOC** **DET=box=D2**
'The cart, it is in the box.' (or rather: it exists with respect to the box's inside)

b. Le=kàaro=o' h-òok **ich / ti'** **le=kàaha=o'**.
DET=cart=D2 PRV-enter(B.3.SG) **in / LOC** **DET=box=D2**
'The cart, it entered (lit. in) the box.' (or rather: it entered with respect to the box's inside)

c. Le=kàaro=o' h-hóok' **ich / ti'** **le=kàaha=o'**.
DET=cart=D2 PRV-exit(B.3.SG) **in / LOC** **DET=box=D2**
'The cart, it exited [lit. in] the box.' (or rather: it exited with respect to the box's inside)

In (24), *ich* alternates with the generic preposition *ti'*. Neither *ich* nor *ti'* distinguish between Locative (AT, (24a)), Goal (TO, (24b)), or Source (FROM, (24c)) functions; and they are compatible with Route (VIA) and Direction (TOWARD/AWAY-FROM) functions as well. But *ti'*, in addition to marking spatial Grounds, also occurs with adjuncts denoting possessors, recipients, and certain other oblique functions. (*Ti'* also occurs as a Place adverb; e.g. in (24a).)

N_{Srel}s are either inalienably possessed by the Ground-denoting nominals, or they are "adverbialized" by means of the 'relational' suffix *–il*. The first construction is illustrated with *óok'ol* '(on) top', 'upper side', 'above' in (25). Again, the form of the Ground-denoting adjunct does not reflect the role of the Ground in the CoL event, corresponding to the Path functions AT in (25a), TO in (25b), and FROM in (25c):

(25) a. …h-tàal u=balak' **y=óok'ol le=pak'=o'**.
PRV-come(B.3.SG) A.3=roll **A.3=on DET=brickwork=D2**
'…it came rolling on the wall.' (PATHS 09 SBM)

b. H-na'k **y=óok'ol le=che'=o'**.
PRV-ascend(B.3.SG) **A.3=on DET=wood=D2**
'It went onto the piece of wood.' (FIGURE_GROUND 13 NMP)
c. Káa=h-em **y=óok'ol le=che'=o'**…
CON=PRV-descend(B.3.SG) **A.3=on DET=wood=D2**
'It went down from the piece of wood…' (FIGURE_GROUND 03 RMC)

Like *óok'ol*, *àanal* 'underside', 'below' and *iknal* 'at', 'vicinity' head Ground-denoting adjuncts without the support of the 'relational' suffix *–il* or the generic preposition *ti'*. All remaining N_{Srel}s generally do require such support to form Ground-denoting adjuncts. Some examples:

(26) H-òok le=chan xóot'+che' **t-u=ts'u'** **le=chìina=o'**.
PRV-enter(B.3.SG) DET=DIM cut+wood **LOC-A.3=core DET=orange=D2**
'The little cut piece of wood entered in the interior of the orange.'
(FIGURE_GROUND 15 EMB)

(27) …k-u=máan **t-u=tséel le=chan pìino=o'.**
IMPF-A.3=pass **LOC-A.3=side DET=DIMpine=D2**
'…it passes by the little pine tree.' (Mland M2 SME & FEE)

(28) …yan u=máan **pàach-il te=chan láaguna** …
OBL A.3=pass **back-REL LOC:DET=DIM lagoon**
'…it will pass behind the little lake…' (Mland M2 NMP & RMC)

The most frequent N_{Srel}s are listed in Table 3.[10] Like other Mayan languages (cf. Levinson 1994 for Tzeltal), Yukatek has a generative system of applying body part terms to inanimate objects. Such body part terms can be used as N_{Srel}s in Ground-denoting adjuncts as well. Among the items in Table 3, at least *nak'* 'belly', 'mid height', *pàach* 'back', 'behind', 'perimeter', 'outside', and *táan* 'front', 'before' fall in this category. The function of N_{Srel}s is to select a part of the Ground or a Region projected by it for the Place denoted by a spatial adjunct. If no particular part or Region is chosen, the generic preposition *ti'* is selected by default.

It has been shown throughout the discussion in this section that Yukatek Ground-denoting adjuncts do not encode Path functions. The role of the Ground in the CoL event is clarified by the predicate, which entails a Locative relation that characterizes the source or target state of the CoL event (in between source and target state with *máan* 'pass'). Also compatible with the facts presented so far is an analysis of the Ground-denoting adjuncts as invariably

[10] *Chúumuk* 'center' is an exception in that it occurs adverbially without *–il*.

encoding event Locations. On this account, both (29a) and (29b) should be fine as descriptions of the scenario in Figure 3-4. This, however, is not the case.

CONSTRUCTION IN GROUND ADJUNCTS	NOUN	GLOSS
[CORE [$SetA_i$-N_{rel} NP_i]]	*àanal* *iknal* *óok'ol*	under at on
[CORE [*ti'* [$SetA_i$-N_{rel} NP_i]]] or [CORE [N_{rel}(*-il*) *ti'* NP]]	*chúumuk* *háal* *nak'* *(ba')pàach* *(ak)táan* *tséel* *ts'u'* *xno'h* *xts'i'k* *xùul* *yáam*	center edge belly back front side core right left end interstice

Table 3. *Frequent NSrels in Yukatek Ground-denoting adjuncts*

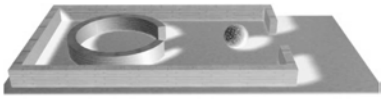

Figure 4. *First frame of ENTER_EXIT 10*

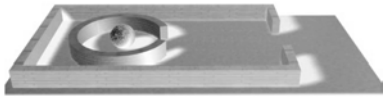

Figure 3. *Last frame of ENTER_EXIT 10*

(29) a. …káa=h-**òok** **ich-il** **le=sìirkulo=o'**.
CON=PRV-**enter**(B.3.SG) **in-REL** **DET=circle=D2**
'…it entered (lit. in) the circle.' (ENTER_EXIT 10 FEE)

b. #H-**òok** **ich-il** **le=kwàadro=o'**.[11]
PRV-**enter**(B.3.SG) **in-REL** **DET=square=D2**
'…it entered (lit. in) the square.' (ENTER_EXIT 10 FEE)

(29b) is anomalous in reference to Figure 3-4. The roles assigned to Ground-denoting adjuncts are unambiguous and quite "crisp" semantically; they are just not reflected in the form of the adjuncts. In this respect, Yukatek differs from better-known 'verb-framed' languages such as Spanish, where Path functions are to some extent encoded in Ground-denoting expressions, in addition to these being assigned roles in CoL event structures by the predicate. As already discussed in section 3.1, the absence of Path distinctions in Yukatek has the consequence that verbal cores cannot contain more than one Ground-denoting adjunct –

[11] I am using the hatch mark (#) for forms or constructions which are structurally well-formed, but cannot be used in reference to a particular scenario.

to achieve this, the CoL verb would have to specify multiple Locative relations holding at different stages of the event, and such verbs are unattested in Yukatek or elsewhere.

There is, however, one exception: Direction functions (TOWARD/AWAY-FROM) are not marked by adjuncts, but neither are they encoded by predicates. Direction interpretations simply arise in context and are never unambiguous, except in combination with the indexical CoL verbs *tàal* 'come', 'move to deictic center', *u'l* 'return to deictic center', and *bin* 'go', 'move from deictic center or Place given in context'. Because these lexicalize CoL wrt. their inherent indexical Grounds and are thus incompatible with lexical Ground expressions in these same Locative functions, they can take Ground-denoting adjuncts in addition which are then unambiguously interpreted as encoding Directions. Consider (30). The first clause states that Juán left the deictic centre *headed for* the town of (Felipe) Carrillo (Puerto). In the subsequent discourse, it is explicitly stated that Juán never reached that town, as he was stalled on his way in the village of Señor. The point is that *bin Carrillo* cannot mean 'go to Carrillo', but only 'head towards Carrillo':

(30) Káa=h-ts'o'k u=**bin** **Carrillo** Juán=e', káa=h-k'uch
CON=PRV-end(B.3.SG) A.3=**go** **Carrillo** Juán=TOP CON=PRV-arrive(B.3.SG)

Señor=e', káa=t-uy=il-ah Pablo=i'.
Señor=D3 CON=PRV-A.3=see-CMP(B.3.SG) Pablo=D4

Káa=t-y=a'l-ah=o' ma' k'uch-uk Carrillo=i'.
CON=PRV-A.3=say-CMP(B.3.SG)=D2 NEG arrive-SUBJ(B.3.SG) Carrillo=D4

'(When) Juán took off for Carrillo, (then) he reached Señor, (then) he met Pablo. At that moment (lit. (when) it said that), he had not (yet) arrived in Carrillo.' (Fieldnotes)

Heading cores with Direction-encoding adjuncts is in fact one of the primary functions of the indexical CoL verbs in Yukatek discourse.

3.3. Predicates in CoL-denoting expressions

The overwhelming majority of tokens of CoL-denoting verbal cores in Yukatek discourse are headed by the small set of inactive verbs listed in Table 4, or by their causative counterparts. Inactive roots lexicalize uncaused state changes (cf. Bohnemeyer to appear); it is hardly surprising that this class should host the bulk of the roots that appear in CoL-denoting cores. Before the internal structure of the class of roots in Table 4 is examined in more detail, a brief review of other predicates in CoL-denoting cores may be in order. There are verbs of the inactive form class that occasionally occur in CoL-denoting verbal cores, but are not listed in Table 4, since it is not obvious that CoL is their basic meaning. This includes *náak* 'reach', 'extend up to', which is sometimes used as an alternative to *k'uch* 'arrive'. In a similar manner, some inchoative verbs are sometimes used as alternatives to inactive verbs of Table 4; one example is *náach-tal* 'become distant', which may be used in some contexts instead of *bin* 'go' or *luk'* 'leave'.

There is only one active intransitive stem that regularly appears in CoL-denoting cores: *sùut* 'turn', 'spin', 'return', the antipassive form of the transitive root *sut* 'turn' (cf. (31)). *Sùut* is recruited for the purpose of expressing return to a Place not necessarily identical with

the deictic center; it thus fills a gap in the system of Table 4, given the deictic specialization of *u'l*.

CoL root	causative stem	type of change	role of Ground in event structure	Ground	Ground encoded
tàal 'come'; *u'l* 'return'	*tàas* 'bring'; *u's* 'return'	discrete	target state ('TO')	≥0D	inherently deictically
bin 'go'	*bis* 'take'		source state ('FROM')		inherently indexically
máan 'pass'	*máans* 'pass'		between ('VIA')	≥0D	lexically
luk' 'leave'	*lu's* 'remove'		source state ('FROM')	≥0D	
hóok' 'exit'	*ho's* 'extract'			3D (or 2D enclosure)	
òok 'enter'	*òoks* 'insert'		target state ('TO')		
k'uch 'arrive'	*k'uhs* 'cause to arrive'			≥0D	
lúub 'fall'	*lu's* 'fell', 'drop'	gradual		≥2D	
na'k 'ascend'	*na'ks* 'lift'				
em 'descend'	*èens* 'pluck', 'lower'		source state ('FROM')		
líik' 'rise'	*li's* 'lift'				

Table 4. *Inactive CoL roots*

(31) …káa=t-y=óol-t-ah na'k-al y=óok'ol le=mùul=o',
CON=PRV-A.3=soul-APP-CMP(B.3.SG) ascend-INC A.3=on DET=hill=D2
'…it wanted to ascend (lit. on) the hill,'

káa=h-ka'=**sùut**-nah ka'-téen
CON=PRV-REP=**turn\ATP**-CMP(B.3.SG) two-times
'it returned again'

te'l tu'x h-luk'=o'.
there where PRV-leave(B.3.SG)=D2
'there where it came from.' (PATHS 16 RMC)

As mentioned in section 3.2, there are marginal occurrences of cores in which what is pragmatically the Ground is linked to the U-argument of a transitive stem; examples are (17) and (19) above. Much more common are transitive cores in which the Figure is linked to U and the Ground to an adjunct; these express caused CoL. The causativized stems of Table 4 figure prominently in such cores; cf. e.g. *hóok'-s* 'cause to exit', 'extract' in (10) above. There are also transitive roots of caused motion, in particular in the domains of insertion and extraction and ballistic motion. One example is *pul* 'throw' in (32):

(32) …le=x-ch'úupal=o', t-u=**pul**-ah
DET=F-female:child=D2 PRV-A.3=**throw**-CMP(B.3.SG)

hun-p'éel máartiyo ti' le=nohoch máak=o'…
one-CL.IN hammer LOC DET=big person=D2

'…the girl, she threw a hammer to the old person…' (ECR 122P_hammerthrowdrop FEE)

For the interaction between verbs and Ground-denoting adjuncts in CoL-denoting verbal cores, it makes no difference whether the cores are headed by such transitive verbs or by inactive CoL verbs; hence the further discussion is restricted to the latter.

As mentioned in section 3.2, three of the roots of Table 4 are inherently indexical, in the sense that they encode CoL wrt. Grounds which are represented deictically or anaphorically and cannot be specified at all by the adjuncts they combine with. *Tàal* 'come' and *u'l* 'return' both encode CoL with the deictic center in Goal function. (33) illustrates *tàal* in a description of the scenario in Figure 5-6:

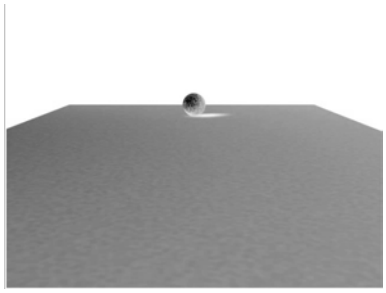

Figure 6. *First frame of Moverbs COME GO 05*

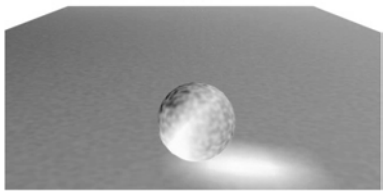

Figure 5. *Last frame of Moverbs COME GO 05*

(33) H-**tàal** u=balak'.
PRV-**come**(B.3.SG) A.3=roll
'It came rolling.' (COME-GO 05 FEE)

Bin 'go' is used with the deictic center in FROM function in (34), in reference to Figure 7-8:

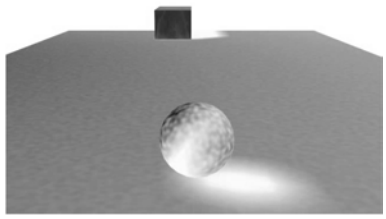

Figure 8. *First frame of Moverbs COME GO 01*

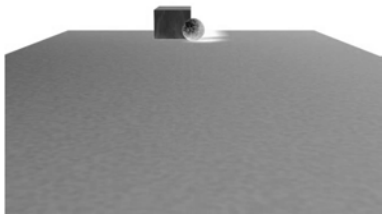

Figure 7. *Last frame of Moverbs COME_GO 01*

(34) Le=chan bòola=o' h-**bin**-ih.
DET=DIM ball=D2 PRV-**go**-B.3.SG
'The little ball, it went.' (COME-GO 01 SBM)

In (35), in reference to Figure 9-10, *bin* occurs with exophoric reference to a FROM Ground different from the deictic center:

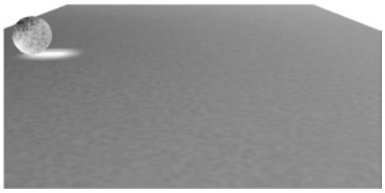

Figure 9. *First frame of Moverbs COME GO 15*

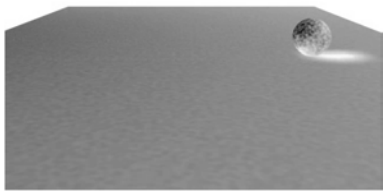

Figure 10. *Last frame of Moverbs COME GO 15*

(35) H-**bin** u=balak'.
PRV-**go**(B.3.SG) A.3=roll
'It went rolling.' (COME-GO 15 FEE)

(36) illustrates anaphoric use of *bin*:

(36) Káa=h-chúun=e', le=chan bòola=o',
CON=PRV-start\ACAUS(B.3.SG)=TOP DET=DIM ball=D2

t-u=xùul yàan, … káa=h-**bin**,
LOC-A.3=end\ATP EXIST(B.3.SG) CON=PRV-**go**(B.3.SG)

káa=h-na'k te'l y=óok'ol le=chan pu'k=o'.
CON=PRV-ascend(B.3.SG) there A.3=on DET=DIM hill=D2

'In the beginning, the little ball, at the end (of the road) is where it was … (and) it went, (and) it ascended there (to) the top of the little hill.' (Mland M1 NMP & RMC)

Bin is probably the most frequent verb of Yukatek (based on informal counts). In descriptions of complex motion scenarios, it serves a number of pragmatic functions, such as encoding the beginning of a multi-Ground journey (as in (36) or its continuation (cf. section 5; esp. example (78)). Another pragmatic function of *bin* is to head verbal cores with Directional adjuncts (cf. section 3.2) or embedded cores in motion-cum-purpose and gerundial constructions (cf. section 3.1). *Tàal* 'come' has similar pragmatic functions, but obligatorily takes the deictic center as Goal.[12] Finally, *u'l* 'return (to deictic center)' is simply the indexical counterpart of *sùut* '(re)turn' discussed above.

The remaining verb roots listed in Table 4 may be combined with phrases that denote Grounds wrt. which the Figure is located at the beginning or end of the CoL event, corresponding to Jackendoff's (1983) 'Bounded Path' functions FROM and TO, respectively, or in between, corresponding to Jackendoff's 'Route' function VIA. As discussed in the previous section, these roles are not reflected in the form of the Ground-denoting adjuncts, but are exclusively expressed by the verb roots themselves. Therefore, if no Ground is encoded in the same clause, a Ground in the function specified by the verb is anaphorically traced in discourse; this is illustrated in (37), where *em* 'descend' is understood to express CoL down from the hillock referred to in the preceding clause:

[12] However, *tàal* 'come' only entails arrival at the deictic center when combined with perfective aspect, and may well be used with other aspects to encode any Path segment that is directed towards the deictic center without necessarily reaching it – and in the case of motion within the speaker's visual field, this of course equals motion towards the speaker/observer.

(37) H-máan tak **y=óok'ol** **le=chan** **bu'tun=o'**;
PRV-pass(B.3.SG) even **A.3=on** **DET=DIM** **hillock=D2**

ts'o'l=e', k-uy=**em**-el=e', …
end=D3 IMPF-A.3=**descend**-INC=TOP

'It even goes over [lit. passes on] the top of the little hillock; afterwards [lit. '(it having) ended], it descends, …' (Mland M5 FEE & SME)

A single root, *máan* 'pass', covers all CoL events involving Route Grounds (cf. section 4.3), while the domain of CoL defined wrt. lexically specified source or end states is carved up among eight roots. Four roots have slots for target state ("TO") specifications (*k'uch* 'arrive', *lúub* 'fall', *na'k* 'ascend', and *òok* 'enter'); four others subcategorize for Grounds that play a role ("FROM") in source states (*em* 'descend', *hóok'* 'exit', *líik'* 'rise', and *luk'* 'leave'). CoL into and out of 3D Grounds or 2D enclosures, respectively – i.e., CoL which if realized by T-Motion involves 'boundary crossing' (Slobin & Hoiting 1994) – is singled out by *hóok'* 'exit' and *òok* 'enter'. *Luk'* 'leave' is the non-indexical counterpart of *bin* 'go', and *k'uch* 'arrive' corresponds in the same way to *tàal* 'come' and *u'l* 'return (to deictic center)'.

The four roots that deal with CoL in the vertical dimension, *em* 'descend' (DOWN FROM), *líik* 'rise' (UP FROM), *lúub* 'fall' (DOWN TO), and *na'k* 'ascend' (UP TO), are special in that they have 'degree achievement' readings (cf. Dowty 1979: 88-91) of gradual (non-discrete) CoL. Consider again *em* 'descend', in (38):

(38) Káa=h-ho'p' uy=**em**-el u=ha'-il le=làaguna=o',
CON=PRV-begin(B.3.SG) A.3=**descend**-INC A.3=water-REL DET=lake=D2

le=káa=h-uts-chah u=bàax-t-a'l
DET=CON=PRV-good-PROC(B.3.SG) A.3=play-APP-PASS.INC

u=ha'-il. **Káa=t-y=a'l-ah=o'**
A.3=water-REL **CON=PRV-A.3=say-CMP(B.3.SG)=D2**

ts'-uy=em-el **hun-píit**.
TERM-A.3=descend **one-CL.bit**

'(When/And then) the water [level] in the lake began to fall [lit. descend], that was [when] [the conditions for] swimming [lit. playing it] improved. At that time [lit. when it said that], [the water level] had already fallen [lit. descended] a bit.' (Kenny RMC)

As soon as the water level starts falling, it has fallen already. To obtain this type of reading, Sources and Goals are abstracted away from –descending from a Source, as in (37), is construed as discrete CoL. Under degree achievement interpretations, the relevant Ground wrt. which CoL is evaluated is not a specific Place, but the vertical itself, which in this case functions as an absolute Frame of Reference (cf. Levinson 2003).

The system of conceptual distinctions in the semantics of the CoL roots is schematically summarized in Figure 11:

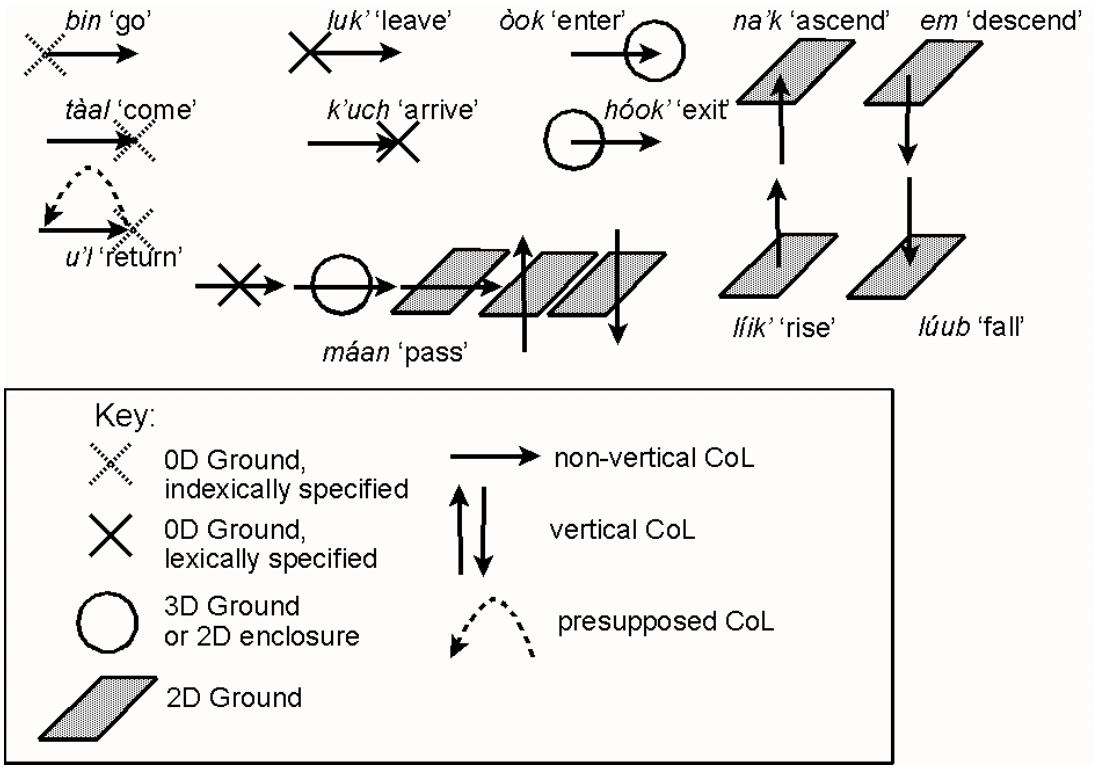

Figure 11. *The semantics of Yukatek CoL verb roots*

The role of the dimensionality of the Ground in the semantics of the CoL roots warrants some discussion. *Hóok'* 'exit' and *òok* 'enter' require "bounded" Ground (object)s, which by conceptual necessity have to extend in a minimum of two dimensions. Similarly, (objects that project) Grounds wrt. which relations in the vertical may be specified necessarily divide Space into an upper and a lower "half", and in this sense likewise have a minimum of two dimensions; this restriction naturally extends to the subcategorization properties of the verb roots that specify vertical CoL. The remaining roots that lexicalize CoL with specifiable end points (corresponding to 'Bounded Paths'), *bin* 'go', *tàal* 'come', *u'l* 'return (to deictic center)', *luk'* 'leave', and *k'uch* 'arrive', may well basically simply *lack* constraints on the Grounds wrt. they encode CoL. On this account, they are *compatible* with 0D Grounds, but likewise with 2D and 3D Grounds; however, their *use* with 2D and 3D Grounds may be *preempted* by the more specific roots that lexicalize CoL wrt. such Grounds, following Grice's first maxim of Quantity (cf. Grice 1975; Levinson 2000). Consider the descriptions in (39)-(40) of the scenario in Figure 12-13:

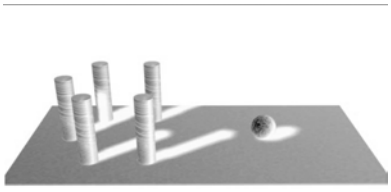

Figure 13. *First frame of Moverbs ENTER EXIT 18*

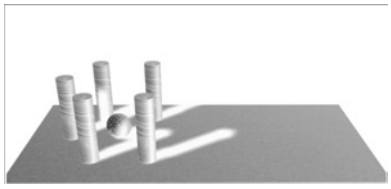

Figure 12. *Last frame of Moverbs ENTER EXIT 18*

(39) H-**k'uch** u=balak' **chúumuk** **te=sìinko** **che'-o'b=o'.**
PRV-**arrive**(B.3.SG) A.3=roll **center** **LOC:DET=five** **wood-PL=D2**
'It arrived rolling at the center of the five trees.' (ENTER-EXIT 18 EMB)

(40) H-chúun u=bin le=chan bòola=o',
PRV-begin\ACAUS(B.3.SG) A.3=go DET=DIM ball=D2

káa=h-**òok** **ich** **le=che'=o'** …
CON=PRV-**enter**(B.3.SG) **in** **DET=wood=D2**

'The little ball started going, (when / and then) it entered among [lit. in] the trees …' (ENTER-EXIT 18 NMP)

In order to express CoL into the Space between the five poles, *k'uch* 'arrive' may be used (39) just as well as *òok* 'enter' (40). But while in the latter case, the inside of the boundary is construed as Ground, using *ich* 'in', in the former case, a 0D Place within the boundary is preferred, using *chúumuk* 'center'. Yet, combinations of *k'uch* 'arrive' and *luk'* 'leave' with *ich* 'in' are possible. (41) shows *luk'* 'leave' with *ich* 'in' in a description of the stimulus clip depicted in Figure 14-15:

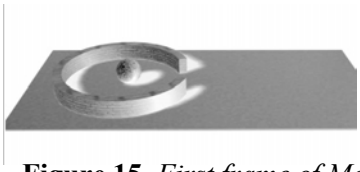

Figure 15. *First frame of Moverbs ENTER EXIT 02*

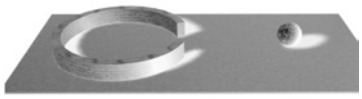

Figure 14. *Last frame of Moverbs ENTER EXIT 02*

(41) H-**luk'** **ich-il** **le=àaro=o'** …
PRV-**leave(B.3.SG)** **in-REL** **DET=ring=D2**
'[The ball] left inside the ring …' (ENTER-EXIT 02 AME)

In contrast to the roots lexicalizing CoL wrt. source or target state (i.e., 'Bounded Path') Grounds, the single Route-denoting root *máan* 'pass' combines freely and regularly with Ground-denoting expressions irrespective of the dimensionality of the Ground (cf. section 4.3). This is to be expected on the Gricean account, since *máan* does not contrast with semantically more specific roots.

The 12 verb roots depicted in Figure 11 are the lexical primitives of Yukatek CoL descriptions. They all denote types of simple CoL events involving only individual Grounds. Section 4 examines how the grammatical and lexical resources introduced in the present section are applied to describe such events in Yukatek – in particular, the CoL roots and the few other verb roots that occur in CoL-denoting verbal cores and the Ground-denoting structures introduced in section 3.2. To describe journeys along multi-Ground Paths in Yukatek, these are broken down into simple CoL events which are encoded in separate independendent clauses; how this is done is discussed in section 5. Section 6 then investigates the encoding of CoL events that do not involve Translational Motion (T-Motion), in an effort to elucidate the role T-Motion plays in the grammar of Yukatek. It turns out that aside from Gricean implicatures, T-Motion is not encoded at all in Yukatek. In terms of (truth-conditional) semantic representations, motion is entirely framed as CoL in this language.

4. The encoding of simple CoL events

In this section, I focus on CoL events that coincide with Translational Motion of the Figure. CoL events that do not involve Figure Motion are discussed in section 6.

4.1. Goal (TO)

4.1.1. ≥0D (GO TO, ARRIVE AT)

The dedicated CoL verb for arrival at a ≥0D Ground other than the deictic center is *k'uch* 'arrive'; the dedicated N_{Srel} for 0D Grounds projected by objects, animals, and people is *iknal* 'at', 'vicinity':

(42) H-**bin** u=balak'
PRV-**go**(B.3.SG) A.3=roll
'It went rolling'

káa=h-**k'uch** **y=iknal le=kàaha=o'**.
CON=PRV-**arrive**(B.3.SG) **A.3=at DET=box=D2**
'(and) arrived at the box.' (COME_GO 01 AME)

In natural discourse, it is quite common to refer to the Goal only as a Directional TOWARD function of *bin* 'go'. Unless otherwise stated, this will implicate that the destination is indeed reached:

(43) H-**bin** u=balak' **y=iknal** **le=kàaha=o'**.
PRV-**go**(B.3.SG) A.3=roll **A.3=at** **DET=box=D2**
'It went rolling towards the box.' (COME_GO 01 RMC)

"Directional Goals" are naturally understood as intended or expected to be reached. If this implicature is to be avoided, two other inactive verbs may be used: *he'l* 'stop', 'rest' and *náak* 'reach', 'go as far as'.

(44) Kap' u=**bin**=e', káa=h-**náak**
CON:PRV:begin(B.3.SG) A.3=**go**=D3 CON=PRV-**reach**(B.3.SG)

tu'x yàan le=chan che'=o', káa=h-**he'l**-ih.
where EXIST(B.3.SG) DET=DIM wood=D2 CON=PRV-**rest**-B.3.SG

'It started going, it got as far as where the little stick was, it stopped.' (FIGURE-GROUND 09 NMP)

In (44), the Ground projected by the reference object (a stick) is denoted by an adverbial relative clause headed by *tu'x* 'where'; (20) and (30) above show toponyms denoting *k'uch* Grounds. None of these constructions entail contact with the reference object. If an implicature of contact is to be avoided, the Ground-denoting constructions may be modified by *nàats'* 'near':

(45) …káa=h-**tàal** **he'l-el** **nàats'** **tinw=iknal.**
CON=PRV-**come**(B.3.SG) **rest-INC** **near** **LOC:A.1.SG=at**
'…(and then) it came to stop near me.' (PATHS 08 RMC)

(45) also illustrates *tàal* 'come', which assigns a Goal role to the deictic center. (The same holds for *u'l* 'return', except that *u'l* presupposes CoL FROM the deictic center prior to the arrival.)

4.1.2. ≥2D (GO ON, ASCEND/FALL (TO))

CoL wrt. 2D Goals is above all CoL in the vertical. The dedicated verb for CoL ONTO a higher 2D Ground is *na'k* 'ascend', 'go onto'. It typically combines with the N_{Srel} *óok'ol* '(on) top', 'upper side', 'above' (cf. the examples in (25) above).

(46) Káa=h-**bin** u=balak'=e', káa=h-**na'k**
CON=PRV-**go**(B.3.SG) A.3=roll=D3 CON=PRV-**ascend**(B.3.SG)

y=óok'ol **le=chan** **wòolis** **che'=o'**.
A.3=on **DET=DIM** **round** **wood=D2**

'It **went** rolling, it **ascended** on(to) the little round piece of wood.' (FIGURE-GROUND 01 RMC)

As with 0D Goals, it is entirely possible to refer to ≥2D Grounds as TOWARD Directions. This does of course not entail arrival at the Goal, which therefore may have to be stated separately:

(47) Káa=h-**bin** y=áalkab **y=óok'ol** **hun-p'éel** **tàabla**,
CON=PRB-**go**(B.3.SG) A.3=run **A.3=on** **one-CL.IN** **plank**

k'as=ka'nal yàan-il,
INTENS=high(B.3.SG) EXIST-REL(B.3.SG)

káa=h-**bin** **he'l-el** **y=óok'ol**.
CON=PRV-**go**(B.3.SG) **rest-INC** **A.3=on**

'It went running on(to) a plank, it went to rest on it.' (FIGURE-GROUND 13 RMC)

For CoL DOWN TO a ≥2D Ground, *lúub* 'fall' may be used:

(48) Káa=h-**lúub** **y=óok'ol** **le=mèesa=o'** …
CON=PRV-**fall**(B.3.SG) **A.3=on** **DET=table=D2**
'It fell onto the table…' (MANNER 01 SBM)

Lúub and its causative stem *lúubs* (or *lu's*) 'drop', 'fell' are only used where CoL is caused by the unimpeded pull of gravity. If the fall is initiated by throwing or self-initiated by jumping, the transitive *pul* 'throw' may be used (in the self-initiated case with a reflexive object, as in (58) below). If a gravity-induced reading is to be avoided, the inchoative *kàabal-tal* 'lower' may be used. If the Goal is given in context or simply understood to be "*the*

ground", CoL DOWN TO it may well simply be implicated by the use of *em* 'descend' with a Source specification, as in (12)-(13), (25c), and (37) above (cf. also section 4.2.2).

The Grounds in the examples so far are actually the top surfaces of 3D objects (even if rather flat ones, as in (46)-(47)). There are some obvious borderline cases to this construal. If a 2D surface is reached horizontally, and the surface is construed as unbounded (excluding an ENTER representation), *na'k* 'ascend' and *lúub* 'fall' are not applicable. In such cases, ≥0D-Goal verbs such as *k'uch* 'arrive' and *tàal* 'come' may be combined with *óok'ol* 'on'. As opposed to the planks in (46)-(47), the floor mop in (49) is construed as a 2D object:

(49) Juán=e', káa=t-u=balak'-ah le=bòola=o',
Juán=TOP CON=PRV-A.3=roll-APP-CMP(B.3.SG) DET=ball=D2

káa=h-**k'uch** u=balak' **y=óok'ol** **le=trapeadòor=o'**.
CON=PRV-**arrive**(B.3.SG) A.3=roll **A.3=on** **DET=floor.mop=D2**

'Juán, [when/and then] he rolled the ball, [when/and then] it arrived rolling on the floor mop.' (TRQ 1999 2.2.10 SBM)

A second borderline case arises with CoL UP/DOWN TO a non2D Ground; e.g. the branch of a tree, or the tip of a pyramid, as in (50). In this case, the Ground-denoting adjunct is most likely headed by the generic *ti'*. However, it is also possible to abstract away from the dimensional properties of the reference object. In this case, *óok'ol* 'on' may still be used, as in (31) above.

(50) K-u=**na'k**-al tak **t-u=máas** **ka'nal** **le=chan** **piràamide**,
IMPF-A.3=**ascend**-INC even **LOC-A.3=COMP** **high** **DET=DIM** **pyramid**

ti' k-u=**na'k**-al pek-tal=i'.
there IMPF-A.3=**ascend**-INC sit.on.surface-DIS.INC=D4

'It ascended as far as to the highest [point] of the pyramid, it ascended to sit there.' (ECOM C6 EMB)

Óok'ol 'on' does not entail contact, as (11) above shows; it conflates the senses of English *on*, *on top of*, and *above*. But unlike these, *óok'ol* is not used with vertical surfaces. CoL with a vertical ≥2D Goal may be construed as collision if involving contact – in this case, a contact verb will be used that takes the reference object as U-argument. Otherwise, the relevant part of the reference object, or the Region projected from it, may be selected using the appropriate N_{Srel} from the set in Table 3, in particular, *pàach* 'back', *táan* 'front', or *tséel* 'side'.

4.1.3. 3D (or 2D enclosure) (GO IN, ENTER)

CoL with a target Location IN a 3D Ground object or 2D enclosure is lexicalized by *òok* 'enter'. There are no fewer than three N_{Srel}s that select IN Regions or Places: *ich*(*il*) 'in(side)', *chúumuk* 'center' (both illustrated in (51)), and *ts'u'* 'core' (cf. (52)). *Ts'u'* is reserved for the inside of solid objects.

(51) H-**òok** u=balak' **ich/chúumuk** **le=sìirkulo=o'**.
PRV-**enter**(B.3.SG) A.3=roll **in /center** **DET=circle=D2**
'It entered rolling in/the middle of the circle.' (ENTER_EXIT 01 AME/EMB)

(52) H-**òok** le=chan xóot'+che' **t-u=ts'u'** **le=chìina=o'**.
PRV-**enter**(B.3.SG) DET=DIM cut+wood **LOC-A.3=core** **DET=orange=D2**
'The little cut piece of wood entered in the interior of the orange.'
(FIGURE_GROUND 15 EMB)

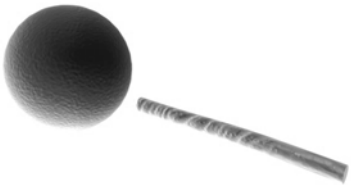

Figure 17. *First frame of Moverbs FIGURE GROUND 15*

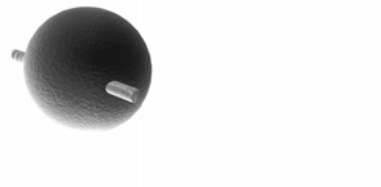

Figure 16. *Last frame of Moverbs FIGURE_GROUND 15*

Figure 16-17 illustrate the stimulus video that elicited (52).

Like all non-indexical CoL roots, *òok* 'enter' does not occur with Directional Goals. For this purpose, the indexical *bin* 'go' may be used:

(53) …k-u=**bin** **chúumuk** **te=chan** **k'àax-o'b=o'**.
IMPF-A.3=**go** **center** **LOC:DET=DIM** **forest-PL=D2**
'…[the ball] went towards the center of the little forest.' (Mland M2 NMP & RMC)

4.2. Source (FROM)

4.2.1. ≥0D (GO FROM, LEAVE AT)

Just as arrival at a ≥0D Ground is typically expressed by combining *k'uch* 'arrive'with the N_{Srel} *iknal* 'at', 'vicinity' (for Places projected by objects, animals, and people in abstraction from their dimensional properties), so departure from the Place of an object etc. is typically expressed by combining *luk'* 'leave' with *iknal*:

(54) H-**luk'** **y=iknal** **le=che'=o'**,
PRV-**leave(B.3.SG)** **A.3=at** **DET=wood=D2**

káa=h-bin u=balak'=e'…
CON=PRV-go(B.3.SG) A.3=roll=D3

'It left at the pole, [and then] it went rolling…' (FIGURE_GROUND 10 FEE)

A combination of *luk'* with a toponym denoting the Source is featured in (20) above. Another strategy one frequently encounters is to establish the Source in a separate Locative predication and then simply refer back to it anaphorically in the departure clause, using *bin* 'go':

(55) …le=chan bòola=o', **ti'** **yàan** **te'l**
DET=DIM ball=D2 **there** **EXIST(B.3.SG)** **there**

y=iknal **le=chan** **tunich=o'**. Káa=h-**bin** u=balak'
A.3=at **DET=DIM** **stone=D2** CON=PRV-**go**(B.3.SG) A.3=roll

u=na'k-al y=óok'ol le=chan bu'tun=o'.
A.3=ascend-INC A.3=on DET=DIM hillock=D2

'…the little ball, there it was at the little rock. [And then] it went rolling to climb the little hillock.' (Mland M2 SME & FEE)

In a parallel fashion, *náach-tal* 'become distant', the inchoative of *náach* 'far', may also be used.

Note that *iknal* 'at' occurs with a Goal role in (42)-(43), with a Source role in (54), and with a Locative function in (55). This shows that *iknal* does not encode any Path function, just as has been established for the generic *ti'* and *ich* 'in' in (24) above and for *óok'ol* 'on' in (25).

4.2.2. ≥2D (GO OFF, DESCEND/RISE (FROM))

Just as with ≥2D Grounds in TO functions, I first concentrate on vertical CoL. CoL DOWN FROM a ≥2D Ground is expressed by *em* 'descend', typically in combination with the N_{Srel} *óok'ol* 'on':

(56) Káa=h-**em** **y=óok'ol** **le=che'=o',**
CON=PRV=**descend** **A.3=on** **DET=wood=D2**

káa=h-tàal u=balak' chúumuk le=kàampo=o'.
CON=PRV-come(B.3.SG) A.3=roll center DET=field=D2

'[When/and then] [the ball] descended from the [disc of] wood, [when/and then] it came rolling towards the center of the field.' (FIGURE_GROUND 03 RMC)

That *óok'ol* 'on' does not discriminate Path relations has already been illustrated in (25) above; but compare also (56) to (46) and (48)-(49) above.

CoL UP FROM a Source is lexicalized by *líik'* 'rise':

(57) Le=ch'íich'=o' h-**líik'** **tu=k'ab** **le=che'=o'.**
DET=bird=D2 PRV-**rise(B.3.SG)** **LOC:A.3=arm/hand** **DET=wood=D2**
'The bird, it took off [lit. rose] from the branch of the tree.' (Kenny SME)

(57) also instantiates vertical CoL wrt. a 1D Ground (a branch). In this case, *óok'ol* 'on' is replaced by the generic *ti'*. This is parallel to (50) above, and just as in that case, it is just as acceptable to alternatively use *óok'ol* 'on' with the tree as a whole, not singling out the branch, parallel to (31) above.

CoL in the horizontal FROM 2D Sources may be expressed by combining *luk'* 'leave' or *bin* 'go' with *óok'ol* 'on'. In (58), however, this combination is actually exploited for CoL DOWN FROM a table top. The reason is that downward motion is construed as a jump here, which is encoded in a separate clause, since it comes equipped with a Goal specification:

(58) Le=mìis=o' h-**luk'** **y=óok'ol** **le=mèesa=o'**,
DET=cat=D2 PRV-**leave**(B.3.SG) **A.3=on** **DET=table=D2**

káa=t-u=pul u=báah te=píiso=o'.
CON=PRV-A.3=throw(B.3.SG) A.3=self LOC:DET=floor=D2

'The cat, it left on top of the table, [when/and then] it jumped [lit. threw itself] onto the floor.' (TRQ 1999 1.1.15 RMC)

4.2.3. 3D (or 2D enclosure) (GO OUT-OF, EXIT)

CoL OUT OF a 3D or 2D-enclosure Source is lexicalized by *hóok'* 'exit'. *Hóok'* combines with the same range of N_{Srel}s as its Goal counterpart *òok* 'enter' discussed in sections 4.1.3. (59) shows *hóok'* with *ich*(*il*) 'in(side)' and *chúumuk* 'center'. In both cases, *hóok'* may be replaced by *luk'* 'leave', which underspecifies the containment relation in the source state. The stimulus clip that elicited the responses in (59) is the one depicted in Figure 14-15 above.

(59) H-**hóok'/luk'** **(**u=balak') **ich/chúumuk le=àaro=o'**.
PRV-**exit/leave**(B.3.SG) (A.3=roll) **in/center** **DET=ring=D2**
'[The ball] exited/left from the (middle of the) ring.' (ENTER_EXIT 02 AME/EMB)

Adjuncts denoting the insides of solid objects are headed by *ts'u'* 'core', reinforced by the generic preposition *ti'* (cf. section 3.2), or by *ti'* alone. (60) illustrates *hóok'* 'exit' with *ts'u'* 'core'; (61) shows *hóok'* with *ti'* alone. An alternative to *hóok'* in such contexts is *híits'*(*t*) 'extract', 'pull out'. (61) features the 'spontaneous' anticausative form *híits'k'ah*:

(60) H-**hóok'** **tu=ts'u'** **le=x-chìina=o'**.
PRV-**exit(B.3.SG)** **LOC:A.3=core** **DET=F-orange=D2**
'[The stick] exited from the core of the orange.' (FIGURE_GROUND 16 NMP)

(61) Le=che'=o' h-**hóok'/híits'**-k'ah **te=chìina=o'**.
DET=wood=D2 PRV-**exit/extract**-SPONT(B.3.SG) **LOC:DET=orange=D2**
'The stick, it exited from/pulled out of the orange.' (FIGURE_GROUND 16 FEE)

The stimulus scenario of (60)-(61) is the reverse of the ENTER scenario depicted in Figure 16-17 above.

That *ich*(*il*) 'in(side)' and the generic preposition *ti'* do not encode Path relations has been shown already in (24) above. A comparison of (59)-(60) with (51)-(52) above makes the same point wrt. *ts'u'* 'core' and *chúumuk* 'center'.

4.3. VIA

The mapping of Paths onto clauses that encode exclusively CoL leads, probably inexorably, to a certain amount of loss of information in the case of Route Paths. Conceptually, CoL is composed out of a Locative relation plus information about a particular part of the event during which this relation applies; and Routes cannot without "oversimplification" be reduced to Locative relations. An event of my walking ACROSS the road is only inadequately characterized by saying that at some point during the "nucleus" of the event, I am located ON the road (cf. also Jackendoff 1983: 174; 1990: 93-94). Thus in a language in which Motion is construed purely in terms of CoL we should expect a drastic amount of underspecification in the encoding of CoL VIA Route Grounds. And this is exactly what is

found in Yukatek, where a single verb, *máan* ‘pass’, is used to encode all CoL events involving Route Grounds, combined with a complete absence of any expression of Path relations in Ground-denoting adjuncts.

4.3.1. ≥0D (GO PAST, PASS)

Passing by a Place projected from an object construed as 0D is straightforwardly expressed by combining *máan* ‘pass’ with *iknal* ‘at’:

(62) …k-u=**máan** **y=iknal** **hun-p’éel** **chan** **ba’l** **chak**…
IMPF-A.3=**pass** **A.3-at** **one-CL.IN** **DIM** **thing** **red(B.3.SG)**
‘…it passes by a thing which is red…’ (ECOM Y B5 RMC)

An interesting variant is the use of *tséel* ‘side’ instead of *iknal* as N_{Srel} – even with objects that do not afford discrimination of inherent sides, as in (63):

(63) …k-u=**máan** **t-u=tséel** **le=chan** **pìino=o’**.
IMPF-A.3=**pass** **LOC-A.3=side** **DET=DIM** **pine=D2**
‘…it passes by the little pine tree.’ (Mland M2 SME & FEE)

It seems that the side is projected wrt. the Figure in such cases.

A toponym denoting a VIA Ground with *máan* ‘pass’ is illustrated in (20) above.

4.3.2. 1/2D (GO ACROSS/ALONG/OVER/UNDER/AROUND)

The radical underspecification of Motion wrt. Route Grounds in Yukatek is nowhere as apparent as with 1D or 2D Grounds. This is illustrated by a comparison of (64), where a combination of *máan* with the generic preposition *ti’* is used to represent crossing of a railroad track, to (65), where the same combination occurs in reference to motion ALONG a road:

(64) Túun bin u=balak’=e’,
PROG:A.3 go A.3=roll=D3

káa=h-**máan** **tu=bèel** **le=trèen=o’**,
CON=PRV-**pass**(B.3.SG) **LOC:A.3=way:REL** **DET=train=D2**

káa=h-òok ich le=che’-o’b=o’ …
CON=PRV-enter(B.3.SG) in DET=wood-PL=D2

‘[The ball] went rolling, [and then] it passed across [lit. wrt] the rail track, and it entered the group of trees…’ (Mland M1 NMP & RMC)

(65) **Te=bèeh=o’** k-u=**máan**=o’.
LOC:DET=way=D2 IMPF-A.3=**pass**=D2
‘Along [lit. wrt.] the road, there it passes.’ (Mland M5 FEE & SME)

To disambiguate CoL ACROSS a 1D Ground, *ch’ak* ‘cut’ or *k’at* ‘cross’, ‘block’ may be used. (66) shows a compound verb formed of *k’at* and *máan*:

(66) ...káa=h-**k'at+máan** **y=óok'ol** **le=rìiyo=o'**.
CON=PRV-**cross+pass**(B.3.SG) **A.3=on** **DET=river=D2**
'…[when/and then] it passed across the river.' (PATHS 03 NMP)

The N_{Srel} *óok'ol* 'on' does not contribute to the disambiguation in (66); it seems just as fine with a scenario such as that in (65) (compare (68) below!). However, it could well be used to disciminate between CoL ALONG ON a 1D Ground and CoL ALONG NEXT TO it. The latter case is represented in (67) by a combination of *iknal* 'at' with *náats'* 'near':

(67) …**náats'** **y=iknal** **u=bèel** **le=trèen** h-**máan**=o'.
near **A.3=at** **A.3=way:REL** **DET=train** PRV-**pass**(B.3.SG)=D2
'… near along [lit. at] the rail track it passed.' (Mland M4 RMC & NMP)

A simpler and far more frequent way of representing CoL ALONG leaves the Route (VIA) function of the 1D Ground to implicature, treating it semantically simply as a Location of the CoL event. This is exemplified in (68), a description of the scenario in Figure 18-19:

(68) H-**tàal** u=balak' **y=óok'ol** **le=chan** **pak'=o'**.
PRV-**come**(B.3.SG) A.3=roll **A.3=on** **DET=DIM** **wall=D2**
'It came rolling on the little wall.' (PATHS 09 EMB)

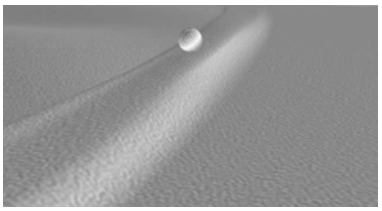

Figure 19. *First frame of Moverbs PATHS 09*

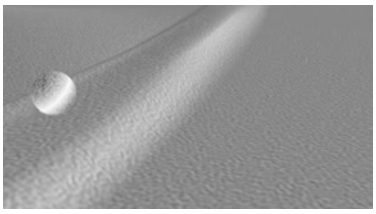

Figure 18. *Last frame of Moverbs PATHS 09*

Descriptions of CoL VIA (i.e. ACROSS) 2D Grounds will again feature *máan* 'pass' in combination with *óok'ol* 'on' or generic *ti'*:

(69) Juán=e', h-**máan** u=xíimbal-il **te=sòokalo=o'**.
Juán=TOP PRV-**pass**(B.3.SG) A.3=walk-REL **LOC:DET=square=D2**
'Juán, he walked over/across the square.' (TRQ 1999 3.1.3 SBM)

(69) is compatible with, but does not entail, transgression of the square's boundaries. (70) shows *óok'ol* 'on' in this function:

(70) Le=tunich=o' h-**máan** u=balak' **y=óok'ol/ich** **le=sùuko=o'.**
DET=rock=D2 PRV-**pass**(B.3.SG) A.3=roll **A.3=on/in** **DET=pasture=D2**
'The rock, it passed rolling over/across/through the pasture.' (TRQ 1999 3.4 SBM)

Ich 'in' becomes applicable as an alternative to *óok'ol* 'on' in (70) under the assumption that the pasture is fenced in (or more generally, when the boundaries of a 2D surface are "raised" into 3D). But even *ich* does not entail transgression of the boundaries, as (76) below illustrates. To encode transgression, again *ch'ak* 'cut' or *k'at* 'cross', 'block' may be used.

Máan 'pass' in combination with *óok'ol* 'on' has been exemplified with a 1D Ground in (66) and with a 2D Ground in (70). Unsurprisingly, this combination is also applicable to 3D

VIA Grounds, extending the amount of underspecification in the encoding of CoL wrt. VIA Grounds even further:

(71) …káa=h-**máan** **y=óok'ol** **le=bu'tun=o'…**
CON=PRV-**pass**(B.3.SG) **A.3=on** **DET=hillock=D2**
'…[when/and then] it passed over the hillock…' (Mland M3 RMC & NMP)

This explains the rather cumbersome description in (72) of the scenario depicted in Figure 20-21:

(72) H-bin u=balak', káa=h-na'k te=pak'=o',
PRV-go(B.3.SG) A.3=roll CON=PRV-ascend(B.3.SG) LOC:DET=wall=D2

káa=h-**máan** **y=óok'ol**,
CON=PRV-**pass**(B.3.SG) **A.3=on**

káa=h-bin u balak'=e', káa=h-he'l-ih.
CON=PRV-go(B.3.SG) A.3=roll=D3 CON=PRV-rest-B.3.SG

'[The ball] went rolling, [when/and then] it ascended the wall, [when/and then] it passed over it, [when/and then] it went rolling, [when/and then] it stopped.' (PATHS 05 FEE)

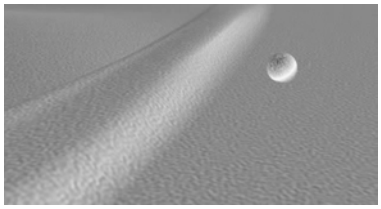

Figure 21. *First frame of Moverbs PATHS 05*

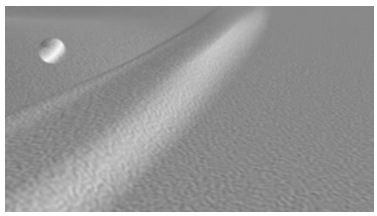

Figure 20. *Last frame of Moverbs PATHS 05*

Out of context, a clause headed by *máan* 'pass' with a Ground-denoting adjunct headed by *óok'ol* 'on', as in the second line of (72), does not discriminate between CoL OVER the wall and CoL ALONG the wall, as in the scenario in Figure 18-19 above. Furthermore, since *óok'ol* does not entail contact (cf. (11) above and section 4.1.2), *máan* plus *óok'ol* will also be used in scenarios like 'The bird flew over the tree / across the valley'.

Passing BEHIND, IN FRONT OF, AT THE SIDE OF, or UNDER a ≥2D Ground, etc., is expressed by combining *máan* 'pass' with the requisite N_{Srel} out of the repertoire listed in Table 3 above. (28) above illustrates *pàach* 'back', 'behind', 'perimeter', 'outside' in this function. The relevant sense in this context is 'behind' (or 'at the back of'), but (28) could also mean 'It will go around the little lake'. An unambiguous way of describing CoL AROUND a Ground is shown in (73), using *ba'pàach* 'perimeter':

(73) …**tu=ba'pàach** **bèey** **le=ha'** k-u=**máan**=o'.
LOC:A.3=perimeter **thus** **DET=water** IMPF-A.3=**pass**=D2
'…around the lake like that it passed.' (Mland M4 FEE & SME)

Having only a single verb that lexicalizes CoL wrt. VIA Grounds, and no encoding of Paths relations, generally puts Yukatek at a disatvantage vis-à-vis languages which directly encode

Path functions, such as English. But this disadvantage of course disappears where Path functions are conflated in those other languages, and in such areas, the encoding of CoL may actually give Yukatek the edge of specificity. This is illustrated by (74)-(75). The most likely English renditions of these scenarios do not distinguish between the VIA readings of these examples and Goal interpretations.

(74) K-u=**máan** **y=áanal** **le=éeskalèera=o'**?
IMPF-A.3=**pass** **A.3=under** **DET=ledder=D2**
'Does he go [i.e. pass] under the ledder?' (Route DW1 AME & NMP)

(75) Juán=e' ti' h-**máan** **tu=yáam** **le=bu'tun-o'b=o'**.
Juán=TOP there PRV-**pass**(B.3.SG) **LOC:A.3=interstice** **DET=hillock-PL=D2**
'Juán, he went [i.e. passed] between the hillocks.' (TRQ 1999 4.1.7 SBM)

4.3.3. 3D (or 2D enclosure) (GO THROUGH)

It has been indicated in the previous section that *máan* 'pass' in combination with extended (i.e., ≥1D) Grounds does not entail transgression of the Ground's boundaries. If the nature of the communicative task induces speakers to avoid ambiguity, the result are excruciatingly explicit descriptions such as (76), which in its elaborateness is rather similar to (72) above:

(76) Pedro=e' h-**òok** **ich** **le=tunèel=o'**,
Pedro=TOP PRV-**enter**(B.3.SG) **in** **DET=tunnel=D2**

káa-h=**máan** **ich** **le=tunèel=o'**,
CON-PRV=**pass**(b.3.SSG) **in** **DET=tunnel=D2**

káa=h-ka'=**hóok**-ih.
CON=PRV-REP=**exit**-B.3.SG

'Pedro, he entered [lit. in] the tunnel, [when/and then] he went through [lit. passed in] the tunnel, [when/and then] he exited again.' (TRQ 1999 3.5 SBM)

Note that even (76) does not entail that the Figure (Pedro) entered and exited the tunnel at opposite ends!

5. The encoding of complex CoL events

As laid out in section 3, no single CoL-encoding clause in Yukatek expresses CoL wrt. more than one Ground, since Ground-denoting adjuncts do not mark Path roles. These are expressed exclusively by the verb itself, so combinations of multiple Ground-denoting adjuncts are uninterpretable. This is illustrated in (14)-(15) above. As mentioned in section 3.2, the only cases of CoL-denoting clauses that even *refer* to more than one Ground are clauses headed by one of the indexical CoL verbs *bin* 'go', *tàal* 'come', or *u'l* 'return (to deictic center)' when modified by Ground-denoting adjuncts in Direction functions (as in (30), (43), (47), (53), and (56) above).

The one-CoL-Ground-per-clause constraint has a straightforward, though no less dramatic, effect on the encoding of motion events that involve multi-Ground Paths: what can be construed as a single event of Translational Motion in English, leading from a Source to a

Goal and passing by apparently up to several VIA Grounds along the way, has to be broken down into a sequence of single-Ground CoL events in Yukatek, all encoded by independent clauses. Consider (77), another description of the scenario illustrated in Figure 1-2 above:

(77) Ba'l=e', be'òora=a' t-inw=il-ah=e',
thing=TOP now=D1 PRV-A.1=see-CMP(B.3.SG)=TOP

hun-p'éel chan áasul ba'l k-u=p'áat-al t-u=xùul
one-CL.IN DIM blue thing IMPF-A.3=leave\ACAUS-INC LOC-A.3=end\ATP

le=tu'x h-**luk'** le=chan ba'l chak=o',
DET=where PRV-**leave**(B.3.SG) DET=DIM thing red(B.3.SG)=D2

k-u=**bin** u=balak'=e', k-u=ts'o'k-ol=e',
IMPF-A.3=**go** A.3=roll-TOP IMPF-A.3=end-INC=TOP

k-u=**máan** **y=iknal** **hun-p'éel** **chan** **ba'l** **chak** xan=e',
IMPF-A.3=**pass** **A.3=at** **one-CL.IN** **DIM** **thing** **red**(B.3.SG) also=D3

k-u=ts'o'k-ol=e', k-u=**k'uch**-ul
IMPF-A.3=end-INC=TOP IMPF-A.3=**arrive**-INC

y=iknal **le=triàangulo** **áasul=o'**.
A.3-at **DET=triangle** **blue(B.3.SG)=D2**

'But, this time, I saw a blue thing, it remains at the end where the red thing left, [the red thing] went rolling, then it passes by a thing which is also red, then it arrives at the blue [i.e., green] triangle.' (ECOM B5 RMC)

Notice the use of the phrase *ku ts'o'kole'*, literally something like 'it having ended', as an explicit sequentializer, glossed in the translation by 'then'. This shows that the semantic representation of (77) contains indeed a sequence of 'Macro-events', i.e., potentially complex eventuality units that have the temporal properties of simple events (they are individuated by unique beginnings and ends, have a certain duration, etc.); cf. Bohnemeyer (in press) for details. The Path traversed in between Grounds is left to implicature entirely in Yukatek. As a consequence, there are no semantic representations of Translational Motion that involve the homophorphic mapping from subintervals or subevents into Path segments that is assumed to be the prototypical case of Motion semantics in treatments such as Jackendoff (1983, 1990), Pinker (1989), or Talmy (2000).

The typical distribution of information over clauses in Yukatek Motion event descriptions is patterned in a number of characteristic ways at least some of which deserve brief mention here. Consider (78):

(78) a. …le=chan bòola=o', **tu=xùul** **yàan**…
…DET=DIM ball=D2 **LOC:A.3=end\ATP** **EXIST**(B.3.SG)
'…the little ball, it was at the end…'

b. káa=h-**bin**, káa=h-**na'k** **te'l** **y=óokol**
CON=PRV-**go**(B.3.SG) CON=PRV-**ascend**(B.3.SG) **there** **A.3=on**
'[when/and then] it went, [when/and then] it ascended there on'

c. **le=chan** **pu'k=o'** …Túun **bin** u=balak'=e',
DET=DIM **hill=D2** PROG:A.3 **go** A.3=roll=TOP
'the little hill … It was going rolling,'

d. káa=h-**máan** **tu=bèel** **le=trèen=o'**…
CON=PRV-**pass**(B.3.SG) **LOC:A.3=way** **DET=train=D2**
'[when/and then] it crossed [lit. passed] the railroad tracks…'

e. káa=h-ts'o'k=e', kap' u=**bin** u=balak'=e'…
CON=PRV-end(B.3.SG)=TOP CON:PRV:begin(B.3.SG) A.3=**go** A.3=roll=D3
'that having ended, it started going rolling…'

f. káa=h-**náak** **tu=chan** **ts'o'k=o'**, káa=h-kul=i'.
CON=PRV**-reach(B.3.SG)** **LOC:A.3=DIM** **end=D2** CON=PRV-sit=D4
'[when/and then] it reached the little end [of the road], [when/and then] it settled down there.' (Mland M1 NMP & RMC)

The description starts with a Locative clause that refers to the Source of the Motion event. A clause headed by *bin* 'go' signals the beginning of Motion (line b) or its resumption after major "obstacles" have been taken, i.e., major CoL events have occurred (c and e). This is the Yukatek speaker's way of indicating that there is continued Motion between those Grounds wrt. which CoL is encoded in separate clauses. And since this could go on indefinitely (there not being any formal means for marking the eventual Goal), a final clause signals explicitly the Figure's coming to rest, deploying *he'l* 'rest' (e.g., in (37), (44)-(45), (47), and (72) above), or a positional verb, e.g., as in the example at hand, *kul* 'sit'.

6. CoL without Figure Motion

6.1. Figure-Ground assignment

Talmy (2000 Vol. I: 315-316) suggests a variety of properties that determine which object is treated as Figure and which as Ground in Locative and Path relations. Among these stand out movability and relative size (cf. also Landau & Jackendoff 1993). In Yukatek, the object that is perceived as undergoing motion or CoL is generally treated as the Figure, even if it is disproportionally larger than the Ground. (79) as a description of Figure 22-23 shows this:

Figure 23. *First frame of FIGURE_GROUND 11*

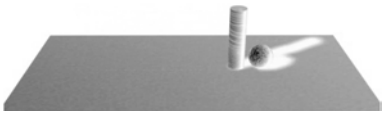

Figure 22. *First frame of FIGURE_GROUND 11*

(79) Le=chan che'=o', káa=h-**bin** u=náats'-al
DET=DIM wood=D2 CON=PRV-**go**(B.3.SG) A.3=approach\ACAUS-INC

te'l y=iknal le=kaníika=o'.
there A.3=at DET=marble=D2

'The little wood [cylinder], [when/and then] it went to approach there wrt. (lit. at) the marble.' (FIGURE_GROUND 11 EMB)

However, as discussed in section 6.2, there are cases in which CoL is predicated over a Figure even though it is the Ground that actually moves. What matters for this type of construal is that the Figure undergoes CoL wrt. the Ground such that it ends up in the target state specified by the CoL predicate, or ceases to be in the source state specified by the predicate. So arguably in these cases, the criterion of Figure motion is relaxed in order to encode the fact that the Figure ends up or ceases to be in a particular spatial configuration. Now, there are also cases in which a clash between Motion-based Figure-selection and spatial-relation-based Figure selection is resolved by treating what is the Ground from the point of view of the spatial relation entailed by the CoL predicate as the theme of the predicate (see Brown (1994); Kita (in prep.)). This phenomenon is particularly likely to occur with insertion and protrusion events. Consider (80), elicited as a description of the scenario in Figure 24-25 (the ring moving onto the stick):

Figure 24. *First frame of FIGURE_GROUND 22*

Figure 25. *Last frame of FIGURE_GROUND 22*

(80) H-**bin** uy=áalkab bèey=a',
PRV-**go**(B.3.SG) A.3=run thus=D1

káa=h-**òok** **ich** **le=che'=o'**.
CON=PRV-**enter**(B.3.SG) **in** **DET=wood=D2**

'[The ring] went running, [when/and then] it entered [lit. in] the stick.
(FIGURE_GROUND 22 NMP)

An interesting variant is shown in (81). The root in this case is the transitive *ts'op* 'puncture', 'bore', 'punch'. Anticausative derivation demotes the A-argument and thereby gives the ring, assigned to the remaining S-argument, a theme interpretation. The Ground-denoting adjunct is headed by the generic preposition *ti'* which underspecifies the target configuration between ring and stick.

(81) H-áalkab-nah=o',
PRV-run-CMP(B.3.SG)=D2

káa=h-**ts'óop** **te=che'=o'**.
CON=PRV-**bore\ACAUS**(B.3.SG) **LOC:DET=wood=D2**

'[The wheel] ran, [when/and then] it got bored onto [lit. wrt.] the stick.'
(FIGURE_GROUND 22 RMC)

(81) is reminiscent of the English Locative alternation, specifically of the *spray*/*load* type, as in *spray paint on the wall* vs. *spray the wall with paint* (cf. Levin 1993: 49-55 and references cited therein). Like *spray*, *load*, and several dozen other English verbs, Yukatek verbs like *ts'op* or *hul* 'thrust', 'thread' alternate between a construal of the Figure as theme, in which case they express CoL of the Figure wrt. the Ground, and a construal of the Ground as theme, in which case they denote a change in spatial configuration of the Ground wrt. the Figure (in the *spray*/*load* cases, e.g., the wagon getting filled with hay, the wall covered with paint, etc.). (82) shows the anticausative *ts'óop* with the stick as the core argument (and thus undergoer), in response to a scene in which the stick moves into the ring:

(82) Káa=h-háarax-nah=e',
CON=PRV-slide-CMP=TOP

káa=h-**ts'óop** **te=yàantah=o'**.
CON=PRV-**bore\ACAUS**(B.3.SG) **LOC:DET=tire=D2**

'[The stick] slid, [when/and then] it got bored into [lit. wrt.] the wheel.'
(FIGURE_GROUND 21 RMC)

What distinguishes the Yukatek case from the English Locative alternation is the extension to the basic inactive CoL verbs *òok* 'enter' and *hóok'* 'exit'. Moreover, examples such as (80) look especially perplexing because of the use of *ich* 'in'. It seems as though semantically, the verb and the N_{Srel} are interpreted as if they formed a complex predicate (in the sense of e.g. Ackerman & Webelhuth 1998) in such cases, even though syntactically, the N_{Srel} clearly heads the Ground-denoting adjunct. However, even though utterances such as (80) are produced by some consultants when asked to describe scenarios such as those in Figure 24-25, a majority of consultants express reservations when prompted to judge their acceptability. Acceptance improves markedly when *ich* 'in' is replaced by the generic preposition *ti'*. More naturalistic examples occur in particular with the Figure as theme in an embedded verbal core within a motion-cum-purpose construction (cf. section 3.1), as in (83):

(83) Le=kòoche=o' h-**òok** u=chokàar-t **le=bisiklèeta=o'**.
DET=car=D2 PRV-**enter**(B.3.SG) A.3=collide-APP(B.3.SG) **DET=bicycle-D2**
'The car, it entered to crash into the bike.' (Motelic RMC)

Among the 12 inactive CoL roots of Figure 11 above, the phenomenon of "Figure-Ground reversal" is attested only with *òok* 'enter' and *hóok'* 'exit'; and consultants seem to be considerably more ready to except it with *òok* 'enter' than with *hóok'* 'exit' (for actual numbers, albeit based on the Moverbs stimulus only, cf. Figures 34 and 35 in section 6.5). Examples with caused-CoL roots such as *ts'op* in (81) are much more widespread. But even so, the phenomenon is generally restricted to the domain of insertion and protrusion. This constrasts with findings from other languages (cf. esp. Burenhult, this issue, and Kita, in prep.) where Figure-Ground reversals seem to play a much more regular role.

6.2. Ground moves

At the head of the list of surefire diagnostics for CoL semantics are scenarios of CoL coming about because the Ground moves or because Figure or Ground emerge in or disappear from a particular Figure-Ground configuration. Evidence from such scenes is discussed in this and

the following two subsection. Note that it is not claimed here that such scenes are significantly more natural to Yukatek speakers than they are to English speakers. These scenes are merely used here as analytical tools to probe the semantics of CoL-encoding constructions, since they effectively divorce CoL from Translational Motion (T-Motion). As it so happens, the results suggest that T-Motion plays a much lesser role in such constructions in Yukatek than it does in English.

Let us start with Ground Motion. Consider Figure 26-27: the enclosure moves such that ball ends up inside.

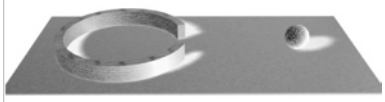

Figure 26. *First frame of ENTER_EXIT 03*

Figure 27. *Last frame of ENTER_EXIT 03*

In describing this scenario, it would be infelicitous to utter (84) out of context:

(84) #Le=bòola=o' h-**òok** **te=sìirkulo=o'**.
DET=ball=D2 PRV-**enter**(B.3.SG) LOC:DET=circle=D2
'The ball, it entered the circle.' (ENTER_EXIT 03 EMB)

However, it turns out that unlike its English equivalent, (84) is not semantically in contradiction with Figure 26-27 for most of my consultants. The problem is merely that (84) invites a strong implicature to the effect that the theme of *òok* 'enter', the ball, moves. If this implicature is blocked or cancelled in context, application of (84) to Figure 26-27 is fine for most consultants:

(85) H=tàal le=àaro y=iknal le=bòola=o';
PRV=come(B.3.SG) DET=ring A.3=at DET=ball=D2

le=bòola=o' h=**òok**-ih.
DET=ball=D2 PRV=**enter**-B.3.SG

'The ring came to the ball; the ball, it entered.' (ENTER_EXIT 03 SBM)

And even consultants who reject (85) generally accept (86), in which merely the result state of having entered is ascribed to the ball:

(86) T-u=huts'-ah u=báah=e',
PRV-A.3=approach-CMP(B.3.SG) A.3=self=D3

káa=t-u=k'al-ah le=bòola=o',
CON=PRV-A.3=close-CMP(B.3.SG) DET=ball=D2

káa=h=ts'o'k=e', le=bòola=o', **òok**-a'n, (…)
CON=PRV=end(B.3.SG)=TOP DET=ball=D2 **enter**-RES(B.3.SG)

'[The ring] approached, and it enclosed the ball, and then, the ball, it was entered, (…)' (ENTER_EXIT 03 FEE)

The preference for applying CoL verbs to the result state of CoL induced by Ground Motion is fully expected under the assumption that these verbs entail pure CoL semantically, but carry generalized conversational implicatures to the effect that this CoL comes about as the culmination of or prelude to T-Motion. To the predication of the result states, these implicatures are irrelevant; thus they do not get in the way of applying CoL verbs in reference to Ground Motion events.

Essentially the same distribution as with *òok* 'enter' is found with *na'k* 'ascend' in relation to the scenario in Figure 28-29, in which a slope slides under a ball:

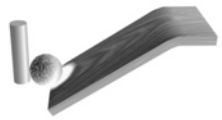

Figure 29. *First frame of FIGURE_GROUND 14*

Figure 28. *Last frame of FIGURE_GROUND 14*

Most consultants find the description in (87) perfectly acceptable for this scenario:

(87) Le=chan tàabla=o' h=péek-nah-ih, káa=h=**na'k**
DET=DIM plank=D2 PRV=move-CMP-B.3.SG káa=PRV=**ascend**(B.3.SG)

le=chan kanìika y=éetel che' **te'l y=óokol=o'**.
DET=DIM marble A.3=with wood **there A.3=on=D2**

'The little plank, it moved, and the little marble and the tree ascended there on top.'
(FIGURE_GROUND 14 EMB)

And again, the result state of *na'k* 'ascend' is considered even more applicable to the ball:

(88) Le=tàabla=o' káa=h-háarax-nah=e',
DET=plank=D2 CON=PRV-slide-CMP(B.3.SG)=D3

káa=h-em kàabal.
CON=PRV-descend low

Káa=h-p'áat le=bòola **y=óokol na'k-a'n**.
CON=PRV-quit\ACAUS(B.3.SG) DET=ball **A.3=on ascend-RES(B.3.SG)**

'The plank, it slid, it went down. The ball ended up on top of it ascended.'
(FIGURE_GROUND 14 RMC)

However, not all CoL verbs/scenarios are compatible with Ground Motion. Consider again the scenario in Figure 22-23 above, in which a stick moves to a ball. In this case, the verb *k'uch* 'arrive' is completely unacceptable with the ball as theme to all consultants, even if it is stated in context that it is the stick that moves. Even the result state of *k'uch* is considered applicable to the ball by only one out of five consultants:

(89) Káa=h-bin u=háarax=e'; káa=h-ts'o'k=e',
CON=PRV-go(B.3.SG) A.3-slide=D3 CON=PRV-end(B.3.SG)=D3

k'uch-a'n **le=bòola** **y=iknal=o'**.
arrive-RES(B.3.SG) **DET=ball** **A.3=at=D2**

'(The stick) went sliding; [when/and then] that became over, the ball was in the state of having arrived next to it.' (FIGURE_GROUND 11 NMP)

It appears that there is a hierarchy of CoL verbs in terms of acceptability with Ground Motion:

(90)

hóok' 'exit' *òok* 'enter'	>	*na'k* 'ascend' *em* 'descend' *líik'* 'rise' *lúub* 'fall' *máan* 'pass'	>	*bin* 'go' *tàal* 'come' *luk'* 'leave' *k'uch* 'arrive' *u'l* 'return'

(Note that the placement of *em* 'descend', *líik'* 'rise', *lúub* 'fall', and *u'l* 'return (to deictic center)' in (90) is based on conjecture; these have not actually been tested for applicability under Ground Motion. For a quntitative overview over the results of the Moverbs study alone, cf. Figure 34-35 in section 6.5) By hypothesis, the verbs on the right in (90) are most and those on the left least strongly associated with T-Motion. But the explanation for the existence of this hierarchy is not entirely clear. It is conspicuous that those five roots that are least acceptable with Ground Motion all entail simple AT Locative relations wrt. ≥0D Grounds as their source or target states. These are Locative relations in which the topology of the Ground is completely irrelevant. The function of the Ground is reduced to defining a Region around it; beyond this, there is no spatial configuration between Figure and Ground. The more complex configurations entailed by the other verbs are afforded only by Grounds of increasing topological complexity. Perhaps the more this is so, the more it becomes meaningful to attribute a change of configuration to the Figure even if this change comes about only because the Ground moves. Even English speakers may be more inclined to say that something "has happened" to a Figure which got trapped in an enclosure than to a Figure which had some other object move next to it.

6.3. Figure emerges/disappears

Another litmus test of CoL semantics features CoL coming about as a result of the Figure emerging in or disappearing from a configuration with the Ground. The stimuli employed in the present study instantiate this type of scenario with teleportation of the Figure, as in science fiction movies. There is no apparent difference in the applicability of Yukatek CoL verbs under teleportation scenarios compared to that under Ground Motion scenarios. (91)-(92) feature *òok* 'enter' in descriptions of a scene in which a ball "beams" into an enclosure; cf. Figure 30-31.

Figure 30. *First frame of Moverbs ENTER EXIT 07*

Figure 31. *Last frame of Moverbs ENTER EXIT 07*

(91) Le=chan bòola=o', káa=h=sáat=e',
DET=DIM ball=D2 CON=PRV=lose\ACAUS(B.3.SG)=TOP

káa=h=chíik-pah ka'=téen=e', ich le=chan àaro
CON=PRV=appear-SPONT(B.3.SG) two=CL.times=TOP in DET=DIM ring

yàan=o'; h=**òok** chíik-pah-al.
EXIST(B.3.SG)=D2 PRV=**enter**(B.3.SG) appear-SPONT-INC

'The little ball, [when/and then] it vanished, [when/and then] it appeared again, it was in the ring; it entered emerging.' (ENTER_EXIT 07 RMC)

(92) Káa=h=sáat=e', káa=h=chíik-pah=e',
CON=PRV=lose/ACAUS(B.3.SG)=TOP CON=PRV=appear-SPONT(B.3.SG)=TOP

ich-il le=sìirkulo yàan=i'; **òok**-a'n.
in-REL DET=circle EXIST(B.3.SG)=D4 **enter**-RES(B.3.SG)

[When/and then] [the ball] disappears; [when/and then] it appears [again],it'sinside the circle; it has entered.' (ENTER_EXIT 07 FEE)

Just as under Ground Motion, the applicability of CoL verbs under teleportation scenarios increases strongly once the context is specified so as to block the default reading of T-Motion of the Figure, cf. (91). And likewise just as illustrated with Ground Motion scenarios, acceptability of uses of CoL verbs in reference to teleportation scenarios generally increases when some form of the verb is chosen that focuses on the result state of the CoL event, such as the resultative derivation in *–a'n* in (92).

Applicability of CoL verbs to teleportation events also seems to vary across verbs. This covariation appears to be governed by the same hierarchy, represented in (90) above, that determines the usability of these verbs under Ground Motion. (93) features *máan* 'pass' in reference to the result state of an event of "beaming" across a dyke, as depicted in Figure 32-33:

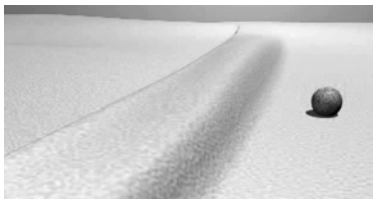

Figure 33. *First frame of Moverbs PATHS 06*

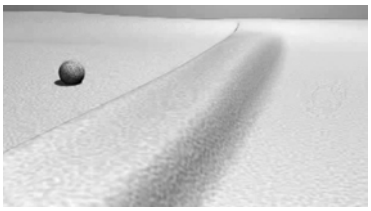

Figure 32. *Last frame of Moverbs PATHS 06*

(93) Káa=h=sáat=e',
CON=PRV=lose/ACAUS (B.3.SG)=TOP

káa=h=ka'=chíik-pah=e' **tu=láahun-tséel**
CON=PRV=REP=appear-SPONT(B.3.SG)=TOP **LOC:A.3=other:one-side**

le=pak' **màah**-a'n yàan=o'.
DET=wall **pass**:CMP-RES(B.3.SG EXIST(B.3.SG)=D2

'[When/and then] [the ball] vanished, [when/and then] it reappeared, it had passed [to] the other side of the wall.' (PATHS 06 RMC)

6.4. Ground emerges/disappears

A spatial configuration may also change due to the Ground emerging or disappearing. There are relatively natural instances of this (at least compared to scenarios of the Figure emerging or disappearing, as discussed in the previous section); e.g., if you build an enclosure around a Figure, can it be said that the Figure has ENTERed the enclosure? And does the Figure EXIT when you tear down the enclosure? This has only been tested with ENTER, EXIT, and ASCEND scenarios (and, once again, with animations of teleportation). The results suggest an even stronger preference for result state reference with inactive CoL verbs with the Figure denoted by their S-arguments, or conversely, an even lesser readiness to use these verbs in reference to the CoL events themselves, compared to what was found above wrt. Figure teleportation scenarios (the consultants's performance on the Moverbs task is quantified in the following section). (94) and (95) show two descriptions of a stimulus clip in which a stick pierces a ball by "beaming" into it, identical except for the teleportation part to the clip depicted in Figure 16-17 above. Both descriptions use the resultative form of *òok* 'enter'; (94) features the Figure – the stick – as S=theme argument, while (95) has the Ground – the ball – in this role, thus exhibiting Figure-Ground reversal, in addition to CoL without Translational Motion:

(94) Káa=h-chíik-pah le=bòola=o',
CON=PRV-appear-SPONT(B.3.SG) DET=ball=D2

òok-a'n che' **ti'**.
enter-RES(B.3.SG) wood **LOC**(B.3.SG)

'[When/and then] the ball appeared, [a] stick had entered [lit. wt.] it.'
(FIGURE_GROUND 20 RMC)

(95) H-sáat-ih, káa=h-chíik-pah=e',
PRV-lose/ACAUS-B.3.SG CON=PRV-appear-SPONT(B.3.SG)=D2

ti' **òok**-a'n **te=che'=o'**.
there **enter**-RES(B.3.SG) **LOC:DET=wood=D2**

'[The ball] vanished, [when/and then] it appeared, it had entered [lit. wrt.] the stick.'
(FIGURE_GROUND 20 SBM)

6.5. Summary

Figure 34 and 35 chart the responses of five adult native speakers (four male, one female; ages ranging from 24 to 54) to those Moverbs stimulus items (see the introduction to this issue@@@) that feature CoL without Figure Motion. The scenario types shown in the

stimuli are ligned up along the x-axis, grouped according to type of CoL event (ENTER, EXIT, ASCEND, PASS, LEAVE, ARRIVE) and type of manipulation (Ground move, Figure "beams", Ground "beams"). Figure 34 has the scenario types grouped according to type of CoL event, while Figure 35 shows them grouped by type of manipulation. The y-axis shows the number of speakers who either produced a particular type of response or readily accepted it when prompted. Three types of responses are represented by bar colors: use of a CoL verb appropriate for the particular type of event – e.g. *òok* 'enter' in response to ENTER-type scenes – in reference to the CoL event with the Figure assigned to the S-argument (*CoL verb*); use of an appropriate CoL verb in result state reference (*RES(CoL verb)*); and use of an appropriate CoL verb with the Ground assigned to the S-argument (*F-G reversal*). Of course, the consultants also produced a variety of other responses besides these – in particular, descriptions in which CoL is not actually encoded (e.g., "When the ball reappears, it is inside the ring").

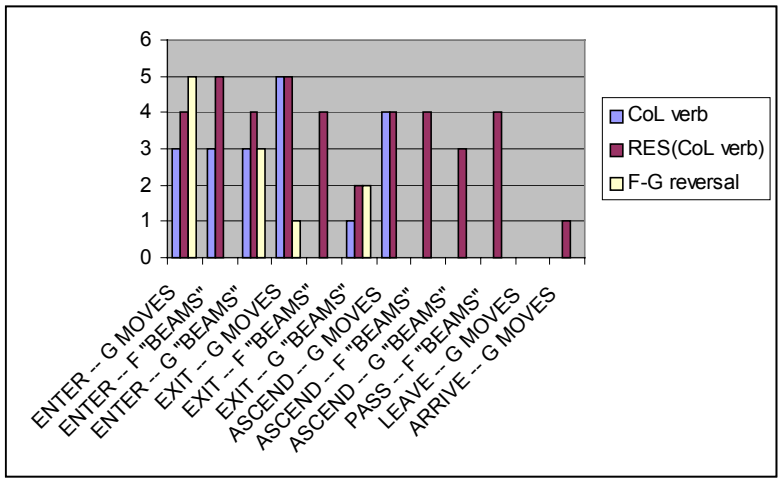

Figure 34. *Responses to Moverbs items featuring CoL w/o Figure Motion (grouped by CoL type)*

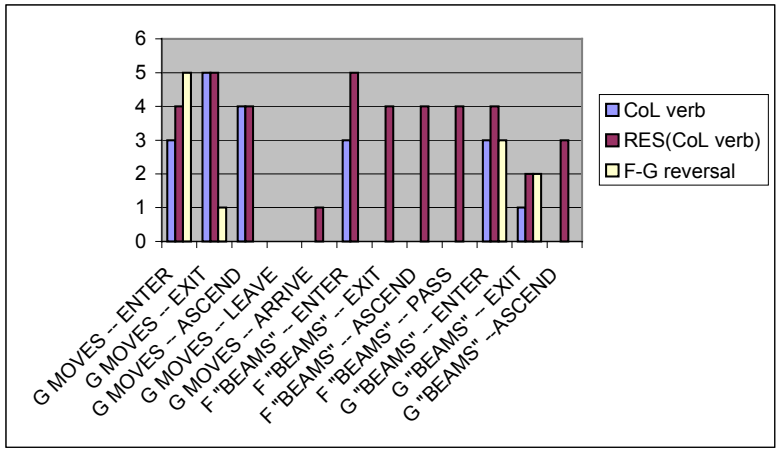

Figure 35. *Responses to Moverbs items featuring CoL w/o Figure Motion (grouped by manipulation)*

The main points that emerge from Figure 34-35 are the following: 'Figure-Ground reversal', i.e., the linking of the Ground in a CoL event to the theme argument of the CoL verb, is restricted to the ENTER/EXIT domain – it only occurs with *òok* 'enter', *hóok'* 'exit', and verbs of protrusion and insertion like *ts'op* 'puncture', 'bore'. Furthermore, Figure-Ground reversal occurs exclusively with Ground Motion and, much less likely, Ground

emerging/disappearing scenarios. This suggests that Figure-Ground reversal is the product of a conflict between Motion or Change as a criterion for Figure/theme selection and the containment relation between Figure/theme and Ground entailed by the CoL verb to obtain at the source or target state of the event.

Independently of Figure-Ground reversal, CoL verbs are used in a wide range of scenarios that do not invole Translational Motion of the Figure/theme, namely under Ground Motion or with the Figure or the Ground emerging or disappearing. The only CoL verbs that are not applicable under Ground Motion are verbs which are unconstrained in terms of the topological properties of the Grounds they combine with; in particular, *bin* 'go', *tàal* 'come', *luk'* 'leave', and *k'uch* 'arrive'. Section 6.2 concludes with some speculation as to why this might be.

Generally, consultants are much more likely to produce or accept CoL verb constructions under lack of Figure Motion in case the context makes it clear that the Figure does not move. This suggests that the CoL verbs do not entail Translational Motion of the Figure, but carry generalized conversational implicatures to its effect. A plausible source for such implicatures would be Grice's (1975) second maxim of Quantity, "Do not make your contribution more informative than is required", or Levinson's (2000) corresponding I(nformativeness) Heuristic ("What is expressed simply is stereotypically exemplified"). Furthermore, aspectual reference has an impact on acceptability of CoL verb constructions under lack of Figure Motion. Perfect or resultative predications, both focusing on the result state of the CoL event instead of the event itself, are accepted across the board, except for the ≥0D-Ground verbs already mentioned. In constrast, the acceptance of perfective-aspect clauses in reference to the CoL events themselves is always equal or lesser than that of result state constructions. Perfective clauses are more likely to occur with *òok* 'enter' than with *hóok'* 'exit' under lack of Ground Motion; they are more likely to occur with *hóok'* than with *na'k* 'ascend', and more likely with *na'k* than with *máan* 'pass'. Moreover, perfective clauses with CoL verbs are more likely in reference to Ground Motion scenarios than in reference to scenarios of Ground emerging/disappearing, and they do not occur at all in scenarios in which the Figure emerges or disappears, except with ENTER-type scenarios.

The data presented in this section suggest that the CoL verbs of Table 4 and Figure 11 lexicalize CoL and do not incorporate Path relations, as their English counterparts *enter*, *exit*, *ascend*, *descend*, etc. do, on the account presented in Jackendoff (e.g., 1990: 43-50).

7. Fictive Motion

One of the arguments Jackendoff (1983, 1990) gives in defense of his position that Translational Motion (T-Motion) is a primitive of 'Conceptual Structure' (CS) is the occurrence of Path relations outside the Motion domain, in expressions of extent (cf. (96a)), orientation (cf. (96b)), or as 'reference paths' (or 'access paths', Talmy's (2000 Vol. I: 136-137) parlance) in Locative predications (cf. (96c)):

(96) a. The highway extends from Denver to Indianapolis. (Jackendoff 1983: 172)
b. The house faces away from the mountains. (Jackendoff 1983: 172)
c. The firehouse is across the street from the library. (Jackendoff 1983: 167)

If Path functions occur independently of CoL – so Jackendoff reasons – then *they* should be primitives of CS, and this status should extend to the event functions that occur uniquely with them, i.e., event functions of T-Motion (encoded at CS by the primitive GO). The event

functions in cases such as (96) are extensions of GO along the lines of Talmy's (1996, 2000: Vol. I) 'Fictive Motion'.

If Path relations are not lexicalized in Yukatek, this immediately raises the question how meanings such as those conveyed in (96) are expressed in this language. In response, it needs to be pointed out, first of all, that Yukatek CoL verbs are in fact compatible with Fictive Motion interpretations, or rather, interpretations of Fictive CoL (cf. Matsumoto 1996):

(97) K-u=**bin** **Xocempich** le=bèeh he'l=a'?
IMPF-A.3=**go** **Xocempich** DET=way PRSV=D1
'Does this road go to [lit. towards] Xocempich?' (Blair & Vermont-Salas 1965-7: 8.1.1)

(98) Le=rìiyo=o' h-**máan** **ich** **le=bàaye=o'**.
DET=river=D2 PRV-**pass**(B.3.SG) **in** **DET=valley=D2**
'The river, it passed through the valley.' (TRQ 1999 3.1.2 SBM)

But descriptions such as (97)-(98) are subject to all those constraints on the encoding of CoL events in Yukatek discussed above. In particular, they cannot combine with more than one Ground-denoting phrase; and since this phrase does not encode Path relations, they have to make do with the inventory of CoL Verbs listed in Table 4 and Figure 11 above. It follows from these restrictions that expressions of "referential Paths" in Locative descriptions are straightforwardly out. Thus, (99) is a Yukatek rendition of 'Don Modesto's house is across the square' – here, the perspectivizing function of the fictive ACROSS Path is taken over by the modifier *láak'* 'other' (fused with the numeral 'one' in the example); the meaning of *láak'* is computed in this context wrt. the deictic center ('this/our side'):

(99) Ti' **yàan** u=nah-il don Modesto
there **EXIST**(B.3.SG) A.3=house-REL don Modesto

tu=la'hun-tséel **le=chúumuk=o'**.
LOC:A.3=other:one-side **DET=center=D2**

'Don Modesto's house is there on the other side of the square.' (TRQ 2001 FEE)

'There are trees along the road' is basically rendered as 'There are trees next to [lit. to the side of] the road'; in order to get an approximation of the sense of distributedness of the English model, a positional predicate may be used in addition.

In order to convey extent in the sense of Talmy's (2000 Vol. I: 138-139) 'coextension Paths', as in (96a), two clauses have to be used: one encoding the fictive Source, most likely headed by *hóok'* 'exit', and one headed by the dedicated extent predicate *náak* 'extent as far as', 'reach' (of course, the Source may also be left implicit, if it is understood in context). The orientation of an inanimate Figure is generally expressed by combining resources such as the N_{Srel}s of Table 3, dimensional terms (cf. Stolz 1995), positional verbs (cf. Bohnemeyer & Brown in prep.), and numeral classifiers; all four types of expressions conflate topological information, and the latter two may in addition also lexicalize orientational information. Consider (100):

(100) Wa'l-kun-bil te'l ka'nal kun bin u=pùunta?
stand.up-CAUS-GIV(B.3.SG) there high SR.IRR:A.3 go A.3=tip
'Is its tip to be stood up?'

… -- U=kòoch-il kun bin te=lu'm=o'.
A.3=wide=REL SR.IRR go LOC:DET=earth=D2
'Its wide [side] is to go on the ground.' (Stolz 1995: 247)

This is from a referential communication task. One consultant describes the orientation of a rhombic object from a photo to another consultant, who has to identify the depicted object from a set of objects and place it in the way depicted without seeing the picture (the verb *bin* 'go' in (100) refers to the placement of the object). The "matcher" asks whether the object should face up, referring to the tip of the object and using the positional root *wa'l* 'stand up', which lexicalizes the erect orientation of objects or animals that in canonical orientation have an upper part, such as a tip. The "director" confirms, referring to the ground and using a nominalization of the dimensional term *kòoch* 'wide' in reference to the base of the rhombus.

Perception verbs do occur with Direction phrases. This permits reference to the orientation of animate Figures with discernible vision apparatus via Direction of gaze:

(101) …hun-túul pàal túun **pàakat toh xaman**…
one-CL.AN child PROG:A.3 **look straight north**
'… a child is looking/facing straight north…' (Tree 3 2.4-2.4)

But descriptions such as (101) do not necessarily involve Fictive Motion, since Direction specifications do not entail Motion or CoL. 'Sensory Path' expressions such as *look into the valley*, in which a 'stimulus' of perception is construed as a Goal (less commonly also a Source) of Fictive Motion (cf. Talmy 2000 Vol. I: 117), appear not to occur in Yukatek; stimuli of perception are encoded by the U-arguments of transitive perception verbs, even if they are construed as Places.

The constraints Yukatek imposes on the uses of dynamic metaphors in the encoding of stationary spatial configurations suggest that cases such as (97)-(98) must be understood as instances of "Fictive Change of Location", rather than Fictive Motion. The existence of Fictive Change metaphors has been noted by Talmy (2000: 134-136) and Matsumoto (1996). A more far-reaching consequence of the absence of Path lexicalization on the availability of metaphors in Yukatek is suggested in Bohnemeyer (1997): Yukatek lacks temporal connectives (adverbials or conjunctions) that express event order, equivalent to English *after*, *before*, or *while* (Bohnemeyer 1998, 2002). It has long been argued (e.g. Bennett 1975; Clark 1973; Traugott 1978) that such connectives express metaphorical Path relations. So perhaps the lack of event order connectives is a direct consequence of the lack of Path lexicalization.

8. Summary and conclusions

This article has presented converging evidence from a variety of sources suggesting that Translational Motion (T-Motion) is consistently framed as Change of Location (CoL) in Yukatek. This first of all manifests itself in the properties verbal cores refererring to events of T-Motion display at the syntax-lexicon interface. Such verbal cores must be headed by verbs lexicalizing CoL; 'manner of motion' verbs (with meanings such as 'walk', 'run', or 'roll'; cf. Talmy 2000) are relegated to gerundial constructions or special manner focus constructions. To this extent, Yukatek instantiates Talmy's (2000 Vol. II) 'verb-framed' pattern of lexicalization. What sets Yukatek apart from other verb-framed languages, e.g. Spanish, is the complete lack of Path distinctions in Ground-denoting adjuncts. The role the Ground plays in the CoL event is specified in the event structure of the CoL verbs instead. Path relations are, strictly speaking, not encoded at all in Yukatek. A syntactic reflex of this is

the necessity to break down travels along multi-Ground Paths into sequences of CoL events wrt. single Grounds, such that each CoL event is encoded by a separate clause.

Path relations are not only not encoded in Ground-denoting phrases, but are likewise not lexicalized in CoL verbs, which merely implicate, but do not entail, T-Motion. This has the straightforward consequence that such constructions are also applicable to CoL events without Figure Motion, i.e., events in which the Ground moves or in which the Ground or the Figure emerge in or disappear from a particular configuration. Acceptability of such uses of CoL-denoting cores increases when the implicature of Figure Motion is blocked or cancelled. Moreover, as is to be expected under the CoL analysis, CoL verbs are more readily used in reference to result states of CoL events without Figure Motion than in reference to these events themselves. One constraint on the use of CoL verbs in the absence of Figure Motion has emerged that requires further study: verbs which do not specify any topological properties of the Ground are by and large excluded from such usage.

Further wrinkles concern the encoding of T-Motion along Route Paths or with Direction specifications. Routes lie in between Source and Goal, so when Motion along a Route is to be framed in terms of CoL, neither the source nor the end state can be characterized as Locative relations between Figure and Ground. Yukatek has a single CoL root, *máan* 'pass', for all events of this type; this results in a hefty amount of underspecification, from the point of view of what is distinguished in English by Route-denoting expressions such as *along*, *across*, *over*, *past*, *through*, etc. Directions do not imply CoL at all. There are no Direction-denoting verbs in Yukatek, and since Path relations are not lexicalized, Directions are likewise not encoded in Ground-denoting adjuncts. Consequently, Ground-denoting phrases are vague regarding Direction interpretations.

A final effect of the framing of Motion as CoL is the absence of Fictive Motion metaphors. What is construed as Fictive Motion in English is expressed, where possible, as Fictive CoL in Yukatek. But such expressions obey the same constraints as do all expressions of CoL, which renders this type of metaphor useless for a substantial part of the meanings modelled as Fictive Motion in English. The meanings concerned are expressed in Yukatek in ways that involve neither Motion nor CoL.

Several questions arise from the findings presented in this article. Do Yukatek speakers conceptualize Motion in the same way as English speakers do? Consider, for instance, the segmentation of complex Motion events involving multi-Ground Paths into sequences of Macro-events of CoL wrt. single Grounds, leaving the Paths traversed in between these Grounds to implicature. As demonstrated in section 5, there are clear semantic differences between discourses such as (77) above and English-style single clause descriptions such as *The red ball rolled from the blue square past the red house-shaped object to the green triangle*. And yet, the Yukatek speakers who uttered (15) or (77) or (78) must have entertained some internal representations of the entire complex Motion event from beginning to end, since they did explicitly comment on the fact that the Figure is stationary preceding the first single-Ground CoL event and becomes stationary again after the last event in the sequence. Similarly, in between clauses referring to single-Ground CoL events, the verb *bin* 'go' is used to indicate continuation of Motion. Or consider the uses of CoL-denoting clauses in reference to events lacking Figure Motion: the fact that CoL-denoting clauses implicate T-Motion of the Figure (assumed to be the referent of the theme argument) strongly suggests that Yukatek speakers consider T-Motion of the Figure the "normal" way of CoL events to come about. But of course, all this only means that there are *some* systems of higher cognition which represent T-Motion in comparable ways across speakers of English and Yukatek; it doesn't follow that *all* internal representations of Motion events are comparable across the two language communities.

Whether or not the latter is the case cannot be determined independently of one's assumptions about the architecture of the mind. Given the architecture Jackendoff (1997) and Landau & Jackendoff (1993) espouse, it is conceivable that native speakers of Yukatek and English share "analogue" 'Spatial Representations' of T-Motion, but diverge when it comes to encoding the content of such representations in the "algebraic" format of 'Conceptual Structure' (CS). They in fact *have* to diverge if one shares Jackendoff's assumption that semantics is but a mapping between syntax and CS.

This brings up the question of whether T-Motion and Path relations can be maintained to be universal primitives of CS, as argued in Jackendoff (1983: 170-174; 1990: 91-95; cf. also Pinker 1989: 176-178), in the face of the facts presented here. In first approximation, the answer would appear to be yes. There is no *a priori* reason, other than perhaps economy, why CS should not be powerful enough to encode any T-Motion event both in terms of a homomorphic mapping from time into a Path defined in terms of dynamic Figure-Ground relations, and alternatively in terms of CoL. When constructing CS representations of Motion events for the purpose of verbal encoding, Yukatek speakers would make use exclusively of the CoL format, while English speakers would predominately employ Path-relational construals. (English speakers represent state change in general, so they ought to be able to construe T-Motion as CoL as well, even if they make much less use of this ability than do Yukatek speakers.)

If Path relations are universal primitives of CS, it follows that they are primitives in the CS of Yukatek speakers as much as they are primitives in the CS of English speakers. This ought to be an empirically testable. One obvious place to look are bilinguals. If Yukatek speakers entertain CS representations of Path relations, learning the meanings of Path expressions in a contact language should pose no particular problem to them, even though their native language does not express Paths. Lehmann (1992) quotes anecdotal evidence indicating that this prediction might fail. The second-language Spanish utterances in (102)-(105) were produced by speakers whose L1 is Yukatek. The use of Motion verbs and Ground-denoting adjuncts deviates strongly from L1-Spanish usage (given in the b-examples) and suggests straightforward calquing from Yukatek:

(102) a. ¿Donde **vienes**?
L1YUK where **come**:PRS:2.SG
'Where do you come?' [intended: 'where from?']

b. ¿**De** donde **vienes**?
L1SPA **from** where **come**:PRS:2.SG
'Where do you come from?'

(103) a. El ratón **salió** **en** su agujero.
L1YUK the rat **exit**:PRT:3.SG **in** its hole
'The rat exited in its hole.' [intended: 'from its hole']

b. El ratón **salió** **de** su agujero.
L1SPA the rat **exit**:PRT:3.SG **from** its hole
'The rat exited from its hole.'

(104) a. El ratón **pasó** **en** su agujero.
L1YUK the rat **pass**:PRT:3.SG **in** its hole
'The rat passed in its hole.' [intended: 'through its hole']

b. El ratón **pasó** **por** su agujero.
L1SPA the rat **pass**:PRT:3.SG **via** its hole
'The rat passed through its hole.'

(105) a. **Saqué** el venado **sobre** el camino.
L1YUK **sack**:PRT:1.SG the deer **on** the way
'I took the deer on the road.' [intended: 'from the road']

b. **Saqué** el venado **del** camino.
L1SPA **sack**:PRT:1.SG the deer **from**:the way
'I took the deer from the road.' (Lehmann 1992: 626)

Substantially more evidence is needed before a decisive conclusion can be reached. Another question is whether the encoding of Path relations at CS plays a role in spatial reasoning. This depends on the division of labor between 'Spatial Representations' and CS in this regard. Another field for psychological experimentation opens up here. *If* CS representations of Yukatek speakers fail to encode Path relations, then *if* Yukatek speakers do not perform worse than English speakers on tasks involving reasoning with Path relations, this would support the position that spatial reasoning is primarily carried out on Spatial Representations, not at CS.

9. References

Ackerman, F. & Webelhuth, G. (1998). *A theory of predicates*. Stanford, CA: CSLI Publications.

Aissen, J. L. (1987). *Tzotzil Clause Structure*. Dordrecht, Netherlands: Reidel.

Ayres, G. & Pfeiler, B. (1997). *Los verbos mayas* [The Mayan verbs]. Mérida, Yucatán: Ediciones de la Universidad Autónoma de Yucatán.

Blair, R. W. (1964). *Yucatec Maya Noun and Verb Morphosyntax*. PhD dissertation, Indiana University.

Blair, R. W. & Vermont–Salas, R. (1965–67). *Spoken (Yucatec) Maya*. Chicago, IL: University of Chicago, Department of Anthropology.

Bennett, D. C. (1975). *Spatial and temporal uses of English prepositions.* London, UK: Longman.

Bohnemeyer, J. (1997). Yucatec Mayan lexicalization patterns in time and space. In M. Biemans & J. v. d. Weijer (Eds.), *Proceedings of the CLS opening academic year '97/'98*. Tilburg, Netherlands: Center for Language Studies.

---- (1998). Temporal Reference from a Radical Pragmatics Perspective. *Cognitive Linguistics* 9: 239-282.

---- (2002). *The grammar of time reference in Yukatek Maya*. Munich, Germany: Lincom.

---- (in press). The unique vector constraint. In E. van der Zee and J. Slack (eds.), *Representing direction in language and space*. Oxford: Oxford University Press.

---- (to appear). Split intransitivity, linking, and lexical representation. *Linguistics* 42.

---- (in prep.). Two ways to skin a cat. Nijmegen, Netherlands: Max Planck Institute for Psycholinguistics.

Bohnemeyer, J., & Brown, P. (in prep.). Standing divided. Nijmegen, Netherlands: Max Planck Institute for Psycholinguistics.

Bohnemeyer, J., & Stolz, C. (in prep.). The expression of spatial reference in Yukatek. Nijmegen, Netherlands: Max Planck Institute for Psycholinguistics.

Bricker, V. R., Po'ot Yah, E., & Dzul de Po'ot, O. (1998). *A Dictionary of The Maya Language As Spoken in Hocabá, Yucatán*. Salt Lake City, UT: University of Utah Press.
Brown, P. (1994). The INs and ONs of Tzeltal locative expressions. *Linguistics* 32: 743-790.
Clark, H. H. (1973). Space, time, semantics and the child. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language*. New York, NY: Academic Press. 27-63.
Dowty, D. R. (1979*). Word meaning and Montague Grammar*. Dordrecht, Netherlands: Reidel.
Edmonson, M. S. (1986). *Heaven born Merida and its destiny*. Austin, TX: University of Texas Press.
Jackendoff, R. (1983). *Semantics and cognition*. Cambridge, MA: MIT Press.
---- (1990). *Semantic structures.* Cambridge, MA: MIT Press.
---- (1997). *The architecture of the language faculty*. Cambridge, MA: MIT Press.
Goldap, C. (1992). Morphology and semantics of Yucatec space relators. *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 45: 612-625.
Grice, H. P. (1975). Logic and Conversation. In P. Cole & J. L. Morgan (Eds), *Speech acts*. New York, NY: Academic Press. 41-58.
Hanks, W. F. (1990). *Referential Practice.* Chicago, IL: University of Chicago Press.
Kaufman, T. (1990). Algunos rasgos estructurales de los idiomas Mayances [Some structural traits of the Mayan languages]. In N. C. England & S. R. Elliot (Eds.), *Lecturas sobre la lingüística Maya* [Lectures on Mayan linguistics]. La Antigua, Guatemala: Centro de Investigaciones Regionales de Mesoamérica. 59-114.
Kita, S. (1999). Japanese ENTER/EXIT verbs without motion semantics. *Studies in language* 23: 307-330.
---- (in prep.). Figure-ground indeterminacy in descriptions of space. Nijmegen, Netherlands: Max Planck Institute for Psycholinguistics.
Krämer, M. & Wunderlich, D. (1999). Transitivity alternations in Yucatec, and the correlation between aspect and argument roles. *Linguistics* 37: 431-480.
Lakoff, G. (1987). *Women, fire, and dangerous things*. Chicago, IL: University of Chicago Press.
Landau, B. & Jackendoff, R. (1993). "What" and "where" in spatial language and spatial cognition. *Behavioral and brain sciences* 16: 217-265.
Lehmann, C. (1992). Yukatekische lokale Relatoren in typologischer Perspektive [Yukatek spatial relators in typological perspective]. *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 45: 626-641.
Lehmann, C. (1993a). Predicate classes in Yucatec Maya. Función 13-14: 195-272.
Lehmann, C. (1993b). The genesis of auxiliaries in Yucatec Maya. In B. Crochetiere et al. (Eds.), *Proceedings of the International Congress of Linguistics* 15 (1992), 2: 313-316.
Lehmann, C. (1998). Possession in Yucatec Maya: Structures - functions - typology. Munich, Germany: Lincom.
Levin, B. (1993). *English Verb Classes and Alternations*. Chicago, IL: University of Chicago Press.
Levinson, S. C. (1994). Vision, shape, and linguistic description. *Linguistics* 32: 791-855.
---- (2000). *Presumptive meanings.* Cambridge, MA: MIT Press.
---- (2003). *Space in language and cognition*. Cambridge, UK: Cambridge University Press.
Lucy, J. A. (1994). The role of semantic value in lexical comparison. *Linguistics* 32: 623-656.
Matsumoto, Y. (1996). Subjective motion and English and Japanese verbs. *Cognitive Linguistics* 7: 183-226.
Miller, G. A. & Johnson-Laird, P. N. (1976). *Language and perception*. Cambridge, UK: Cambridge University Press.

Pfeiler, B. (1995). Variación fonológica en el maya yucateco [Phonological variation in Yukatek Maya]. In R. Arzápalo & Y. Lastra (Eds.), *Vitalidad e influencia de las lenguas indígenas en Latinoamérica*. México, D.F.: Universidad Autónoma de México, Instituto de Investigaciones Antropológicas. 488-497.

Pinker, S. (1989). *Learnability and cognition.* Cambridge, MA: MIT Press.

Romero Castillo, M. (1964). Tres cuentos mayas [Three Mayan stories]. A*nales del Instituto Nacional de Antropologia e Historia* 17/45: 303-320.

Slobin, D. I. & Hoiting, N. (1994). Reference to movement in spoken and signed languages: Typological considerations. *Proceedings of the Twentieth Annual Meeting of the Berkeley Linguistics Society.* 487-505.

Stolz, C. (1995). *Spatial dimensions and orientation of objects in Yucatec Maya*. Ph.D. dissertation, University of Bielefeld.

Straight, S. H. (1976). Decompositional structure in Yucatec verbs. In M. McClaran (Ed.), *Mayan Linguistics. Vol. 1.* Los Angeles, CA: UCLA American Indian Studies Center. 189-198.

Talmy, L. (1996). Fictive motion in language and "ception". In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space*. Cambridge, MA: MIT Press. 211-276.

---- (2000). *Toward a cognitive semantics.* Cambridge, MA: MIT Press.

Traugott, E. C. (1978). Spatio-Temporal Relations. In J. H. Greenberg (Ed.), *Universals of Human Language. Vol. 3: Word Structure*. Stanford, CA: Stanford University Press. 369-400.

Van Valin, R. D. Jr. & LaPolla, R. J. (1997). *Syntax*. Cambridge, UK: Cambridge University Press.

Vapnarsky, V. (1999). *Expressions et conceptions de la temporalité chez le mayas yucateques (mexique)* [Expressions and concepts of temporality among the Yucatecan Maya (of Mexico)]. Ph.D. dissertation, Université de Paris X Nanterre.

Zavala, R. (1993). *Clause Integration with Verbs of Motion in Mayan Languages*. MA Thesis, University of Oregon.