

Split intransitivity, linking, and lexical representation:

The case of Yukatek Maya*

Abstract

Split-intransitive systems of argument marking provide an excellent opportunity to study the structure of the lexical-semantic representations that underlie argument structure alternations and argument linking rules. Yukatek Maya has a typologically rare split-intransitive pattern of argument marking controlled by overt aspect-mood marking. Krämer & Wunderlich (1999) have advanced an analysis according to which the linking of thematic relations to syntactic arguments is governed by lexical aspect as the sole lexical-semantic property linking principles are sensitive to in this language. Critical evidence against this proposal comes from the transitivity alternations of three classes of intransitive verbs: ‘degree achievement’ verbs, ‘non-internally-caused’ process verbs, and posture verbs. Transitivity alternations emerge as being governed by the distinction of internally- vs. externally-caused events. The Yukatek facts suggest that argument linking operates on a lexical information structure (‘event structure’) that partially determines (and thus also underspecifies) both lexical aspect and participant structure.

1. Introduction

‘Split’ systems of argument (or case) marking present both a challenge and an excellent testing ground for theories of argument linking. The central questions posed by such argument marking systems are the following: What semantic factors, if any, govern the choice between argument markers (in those areas of the system where there is a choice)? How do these semantic factors interact with the principles that govern the linking of thematic roles to morphosyntactic arguments in the language? And what does this interaction reveal about the properties of lexical-semantic representations that the linking rules operate on? Typological studies such as DeLancey (1981, 1985), Dixon (1979; 1994), Merlan (1985), Mithun (1991), and Van Valin (1990) prominently discuss the different semantic conditions of the marking splits found across languages, and theoretical approaches to argument linking such as those developed in Dowty (1991), Levin & Rappaport-Hovav (1995) [L&RH], or Van Valin & LaPolla (1997: ch. 4, 7) [VVLP] try to account for this variation.

Yukatek, like several other Mayan languages,¹ shows a pattern of argument marking whereby the single argument of every intransitive verb is marked like either of the two arguments of a transitive verb, depending on the aspect-mood category the verb is inflected for, while the marking of transitive arguments remains unaffected by aspect-mood marking. At first sight, this system differs little from better known cases of argument marking

splits conditioned by aspect marking, such as Hindi (Bhat 1991) and Georgian (Harris 1981),² except that the split occurs in intransitive clauses, not in transitive ones. The Yukatek pattern differs from other cases of split intransitive marking in that it is neither conditioned by lexical semantics, as is the case with Dixon's (1994: 71-78) 'split-S' system,³ nor by clause-level semantic construal of participant-structure factors of volitionality or control, as in Dixon's (1994: 78-83) 'fluid-S' system.⁴

However, on closer inspection, an indirect correlation between argument marking and lexical semantics does emerge: argument marking in intransitive clauses depends on aspect-mood marking, and the realization of aspect-mood marking turns out to vary with lexical predicate class. There is a system of lexical predicate classes which comprises one transitive and several intransitive classes. This system has been argued by Lucy (1994) to be (partially) motivated in terms of distinctions of lexical aspect, along the lines of Vendler's (1957) four 'time schemata of verbs' states, activities, accomplishments, and achievements. On the basis of this correlation, Krämer & Wunderlich (1999) ([K&W]) have proposed a linking mechanism for Yukatek which operates on lexical aspect as the sole lexical-semantic property argument linking is sensitive to in Yukatek. They argue participant structure properties such as agentivity and control and the event structure property of causativity to be irrelevant to linking in Yukatek.

The first aim of the present article is to point out some empirical

shortcomings of [K&W]’s analysis. The critical evidence comes from valence-changing operations which derive transitive verbs from intransitive bases. In accordance with their general proposal, [K&W] argue that the linking properties of transitivized verbs can be predicted entirely from the aspectual properties of their bases. This claim is evaluated here by examining three semantic verb classes which play a key role in crosslinguistic research on argument linking (in particular, in [L&RH]): ‘degree achievement’ verbs, process verbs which lack ‘internal causation’, and posture verbs.

‘Degree achievement’ verbs lexicalize incremental state change without an inherently specified end state (English examples include grow, dim, darken, etc.; cf. Abusch 1985; Bertinetto & Squartini 1995; Dowty 1979: 88-91). In Yukatek, degree achievement verbs pattern with the discrete state change verbs in terms of their aspect-mood inflection properties, as well as in terms of their privileges of undergoing valence-changing derivations – that is, they causativize, by which process a causer argument is added to the verb’s subcategorization frame or valence. Yet, they do not entail discrete end states and thus share the lexical-aspectual properties of Vendlerian activities. [K&W]’s account then makes the wrong predictions regarding the linking properties of these verbs.

Activity verbs differ in their transitivization privileges according to whether or not they encode the property of ‘internal causation’ ([L&RH]).

Internally-caused activity verbs (with meanings such as ‘to work’, ‘to play’, ‘to walk’, etc.) ‘applicativize’, taking on an applied object. In contrast, non-internally-caused activity verbs causativize, as do all intransitive state change verbs. This concerns some verbs of emission (cf. English shine; buzz) and manner of motion (cf. English roll; slide). Thus, the linking properties of transitivized verbs are determined, not on the basis of aspectual properties, but on the basis of whether or not the intransitive base encodes the event structure property of internal causation.

The wider goal of this article is a clarification of some of the theoretical assumptions that underlie research on argument linking not just in Yukatek, but in any language with split argument marking systems or unaccusativity phenomena. Whenever properties of lexical aspect are pitted against properties of participant structure as possible factors in argument linking, as in [K&W] (as well as e.g. in Dowty (1991), [L&RH], Van Valin 1990, Zaenen 1993),⁵ it needs to be determined at the very least to what extent these factors are independent of each other and what level of semantic representation generalizations are made about (the options being minimally lexical vs. compositional semantics). The facts of linking in Yukatek can be brought to bear on these questions. Thus, the evidence from degree achievements shows that the lexical-semantic representation of state change that underlies the formal patterns of aspect-mood marking of Yukatek state change verbs has to be sufficiently abstract to encompass both predicates of

discrete change, which are telic by default, and predicates of non-discrete change, which are atelic by default. Hence, the lexical-aspectual property of telicity is not encoded at the representational level the system of aspect-mood marking patterns taps into.

State change semantics of course also correlates tightly with thematic properties: every state change predicate entails a theme or patient role (Jackendoff 1976). Let us call an information structure that encompasses all information pertaining to the participant roles encoded in a clause a ‘participant structure’. If motivation of argument marking, or determination of linking properties, by lexical-aspectual features vs. participant structure features is assumed to be a dichotomy, as is often the case in discussions such as those quoted above, then the linking rules of Yukatek must be concluded to operate on participant structure, if they do not operate on lexical aspect. However, a careful examination of the transitivization privileges of non-internally-caused verbs in Yukatek suggests otherwise.

At the level of participant structure, internal causation is closely correlated with the properties of control and agentivity: controlled events are internally caused. To rule out a possible alternative analysis of the linking properties of transitivized verbs in terms of control instead of internal causation, posture verbs (cf. English sit, stand, lie) are considered. Yukatek posture verbs denote controllable events, but nonetheless behave like non-internally-caused state change verbs in terms of their linking properties

under transitivity. This suggests that argument linking in Yukatek is sensitive to the property of internal causation, not to control. To save the dichotomy between participant structure and lexical aspect, one would have to assume that internal causation is itself a participant structure property, despite it clearly being a property of events, not participants, conceptually.

This article suggests a more parsimonious solution, according to which argument linking in Yukatek operates neither on lexical aspect nor on participant structure, but on a lexical information structure that logically precedes these two, determining both partially, but not completely.⁶ This representation, called ‘event structure’ here, encodes lexical or constructional event meanings in terms of a subevent decomposition, a classification of subevents in terms of von Wright’s (1963) and Dowty’s (1979) state change calculus, and the causal relations that hold across subevents. Participant structure and lexical aspect are then determined compositionally, on the basis of the event structure representation, the semantics of arguments (and sometimes adjuncts), quantification, and other elements.

On this account, argument linking in Yukatek depends on the properties of lexical event decomposition structures, just as is held in much current theoretical and crosslinguistic work on linking, such as Baker 1997, Croft 1998, Dowty 1991, Grimshaw 1990, [L&RH], and [VVLP]. To the extent that [K&W] represents a challenge to such accounts, this challenge is

refuted here. To reconcile linking from event representation structures as outlined above with the dependency of linking on aspect marking in Yukatek, a set of linking rules is proposed that operate on a simple hierarchy of thematic relations, projected from the causal chain of subevents in the event structure (cf. Croft (1998); Grimshaw (1990: 19-33)). Imperfective aspect takes the role entailed by the causing event as a default for linking, while perfective aspect takes the role entailed by the caused event as a default. The available evidence suggests that similar linking mechanisms, with the very same underlying semantic motivation, are at work in all known cases of aspect-induced argument marking splits.

The remainder of the paper is organized as follows: Section 2 clarifies the assumptions made here about event structure, participant structure, and lexical aspect and the relations among them and introduces the property of internal causation. Section 3 summarizes the relevant facts about argument marking, aspect-mood inflection, and valence-changing operations in Yukatek. Section 4 outlines [K&W]'s analysis. In section 5, the evidence from degree achievement verbs is presented and an analysis of the lexical representation of state change in Yukatek verbs is advanced. Section 6 deals with the linking properties of non-internally caused process verbs and posture verbs. The representation of causation and control in these verbs is discussed, and a semantic analysis of the transitivity operations is proposed. In section 7, the alternative account of argument linking in

Yukatek is sketched.

2. Event structure, participant structure, and lexical aspect

Event structures encode the event meanings of natural language predicates. Following Dowty (1979) and Jackendoff (1976), much contemporary work in lexical semantics assumes a decomposition of complex event representations into atomic subevent descriptions encoded by a small set of primitive semantic event predicates (cf. e.g. Jackendoff 1990; Goldberg 1995; Grimshaw 1990; [L&RH]; Parsons 1990; Pinker 1989; Pustejovsky 1995; [VVLP]). The event structure of a natural language predicate breaks down the predicate's semantics into state, process, and change subevents, according to von Wright's (1963) 'logic of change', along with the causal relations among them. Event structures are assumed in this study to be stored with lexical event predicates (e.g. verb lexemes), but also with event-encoding constructions, following approaches such as DeLancey (1991), Goldberg (1995), and Ackerman & Webelhuth (1998).

Event structures partially, but not entirely, determine the lexical-aspectual properties of predicates. Following Comrie (1976), Smith (1991), and [VVLP], inter alia, lexical aspect ('situation aspect' in Smith 1991) comprises the three parameters dynamicity, durativity, and telicity. These classify predicates according to the mutually exclusive properties stative vs. dynamic, durative vs. punctual, and atelic vs. telic. Vendler's (1957) 'time

schemata of verbs' reconstruct as follows on the parameters: states are stative, atelic, and durative; activities are dynamic, atelic, and durative; accomplishments are dynamic, telic, and durative; and achievements are dynamic, telic, and punctual.

Of the three parameters of lexical aspect, only dynamicity is determined by the predicate's event representation alone. There is no simple way of mapping the event structure distinction between processes and state changes into Vendler's aspectual classification (notwithstanding Dowty's (1979: 122-125) attempt). Process verbs such as walk, sing, or dance are telic when explicitly 'bounded' (cf. Depraetere 1995), as in walk a mile or sing for 10 minutes. State change verbs fall into various subclasses with regard to telicity. Verbs of non-incremental change, like die and burst, are invariably telic. Verbs of non-discrete incremental change – so-called 'degree achievement' verbs (cf. Abusch 1985; Bertinetto & Squartini 1995; Dowty 1979: 88-91) – are only telic if some 'degree of change' (Kennedy & Levin 2001) is specified and atelic otherwise (e.g. The water level rose for five days vs. The water level rose by two meters in five days). The syntactic conditions under which degree achievements are interpreted telically are thus identical to those under which process predicates are interpreted telically. Verbs of discrete incremental change are atelic or telic, depending on the referentiality and quantification of the argument noun phrase that encodes the 'theme' or 'patient' participant undergoing the state change

(write letters is atelic, but write a letter and write five letters are telic); cf. Dowty 1991; Krifka 1989, 1992, 1998; Verkuyl 1972, 1992. Thus, at least with process predicates and predicates of incremental change, telicity is not a part of word meaning or construction meaning; rather, it is determined compositionally. The same is true of durativity. For instance, cross the river is durative, but cross the border can be durative or punctual, depending on the subject (it is punctual if the subject denotes a person; if the subject refers to an army, it may or may not be durative, depending on construal). This is the reason why a distinction between event structure and lexical aspect is drawn here.

Similarly, the event structure of a predicate partially but not completely determines the participant structure of the predicate. Participant structures specify the information related to the event participants entailed or implicated as part of a predicate's meaning.⁷ Consider the verb go. The event structure of go specifies change of location (or 'inherently directed motion' in [L&RH]), a subtype of change of state, of a 'theme' participant with respect to a 'source', 'goal', or 'via' location (cf. Jackendoff 1990). This event structure leaves open the animacy of the theme referent (unlike the event structure of die, which requires the theme (or 'patient') to be animate, since it specifies a change from the state of being alive to the state of not being alive). Only if the referent is animate can it be said to exert control over the event (cf. Floyd / *The train / tried to go to Paris). It is

assumed here that participant structure roles are composite notions. Thus, following Van Valin & Wilkins (1996) (who in turn build on Holisky 1987), the roles ‘agent’, ‘instrument’, and ‘force’ all originate in the thematic role of ‘effector’, entailed by a causing subevent of the event structure. They are differentiated according to properties that lie outside the event structure, stemming typically from the semantics of noun phrases and discourse referents, but may also be entailed by verb semantics. Thus, murder and assassinate share the event structure of kill, but unlike the latter require the effector to be intentional, thus volitional, and thus animate. There is an implicational hierarchy of features here which determine whether an effector is categorized as an agent, a force, or an instrument at the level of participant structure. A similar case could be made for features determining whether the theme role of a state change subevent is further specified as a patient. Linking rules in individual languages may well be sensitive to such more specific participant roles, rather than to the more generic thematic roles entailed by event structures; but at least this should not be a first assumption.⁸

Event structures also encode causal relations across subevents. Following the same rationale as above, causal relations are specified by event structures, rather than – say – by participant structures, because they are not determined compositionally. It is now widely agreed that causal relations are represented in language not primarily as relations between caused events

and their participants, but as relations between caused events and causing events (cf. e.g. Dowty 1979, Parsons 1990, Talmy 1988, Van Valin & Wilkins 1996; one exception is Jackendoff 1990). Thus, the causal structure of the sentence Floyd broke the vase specifies a state change subevent of the vase breaking, caused by some other subevent – which remains unspecified – in which Floyd is involved as a participant. However, not all subevents are equally likely to occur in a given position in the ‘causal chain’ (Croft 1987, 1998; Smith 1991). Event types are conceptualized as differing in their degree of causal efficacy, as it were, i.e. in their likelihood of being portrayed as first causes in a chain of events. Particularly prone to be construed as first causes are, naturally, events that are thought of as potentially occurring “spontaneously”, without being set off by external causes. On this rationale, Floyd sang denotes an event that is conceived of as occurring “spontaneously”, in the sense that it may be instigated by Floyd following his whim. There may well be more indirect causes for the occurrence of this event – say, Sue’s desire to hear Floyd sing and Floyd’s desire to please Sue. But we would not normally assume these to be sufficient conditions for Floyd to sing: for the event to come about, Floyd simply has to engage in the activity of singing, over which he has full control. In contrast, The vase broke denotes an event that is conceived of as not normally occurring without an external cause, and as having (many potential) external causes that are fully sufficient conditions for the event to

happen. Smith (1978) was apparently the first to point out that this difference correlates with The vase broke being causativized with the most simple causative construction there is, a simple transitive clause, expressing direct causation (e.g. Floyd broke the vase), while Floyd sang requires a periphrastic causative construction expressing indirect causation (e.g. Sue made Floyd sing; but not *Sue sang Floyd). Following Smith, [L&RH] argue that the distinction between ‘internally caused’ vs. ‘externally caused’ events delimits the set of verbs undergoing causative alternation in English, and accordingly propose linking rules for English that are sensitive to this distinction. It is shown in section 6 that the same distinction determines the linking properties of Yukatek verbs under transitivity. For the thematic role entailed by internally caused events, Van Valin & Wilkins’s (1996) ‘instigator’ is used here, since an instigator is a participant of the first event in a causal chain, which is the typical place occupied by internally caused events. Since instigators are causers, the instigator role is a special case of the effector role.

Internal causation strongly correlates with the participant structure property of control. If control of a participant over an event is understood as the capacity of the participant to instigate the event and to abort it at any time during the execution, then all controlled events are necessarily internally caused. Internal causation, in contrast, only implies control over the initiation of the event. Floyd wrote a book on semantics and Floyd

jumped into the river are both internally caused, but only the former is fully controlled. Hence, Floyd was trying to write a book on semantics may refer to a time at which Floyd had almost finished the book, while Floyd was trying to jump into the river can only refer to a time preceding the jump. Intransitive verbs that may occur with both animate and inanimate themes, and that entail or implicate control only in the former case, are often not internally caused. Examples include posture verbs such as sit, stand, and hang (e.g. Floyd sat the child on the chair); cf. [L&RH] pp. 97-98. It may in fact only be world knowledge that tells us that the referents of animate themes with these verbs are usually also the instigators and controllers of the events.⁹

The architecture of semantic representations outlined in this section is illustrated in a simplified manner in Figure 1.

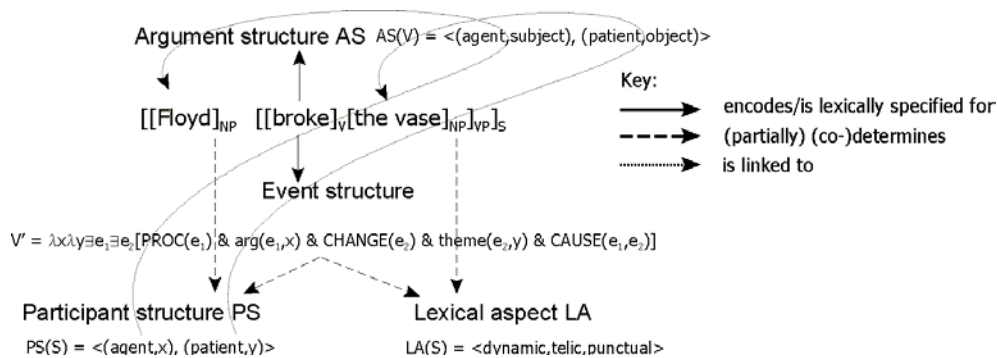


Figure 1. Event structure, participant structure, and lexical aspect

The event structure in Figure 1 is couched in the Neo-Davidsonian formalism of Parsons (1990). Arg represents a generic thematic relation ('argument'). PROC denotes a process predicate; it is chosen here instead of

the familiar DO of Dowty (1979) in order to avoid any allusion of agentivity, control, or internal causation. CHANGE stands for a state change predicate, following Kennedy & Levin 2001. It has the advantage over Dowty's (1979) BECOME to accommodate both discrete and non-discrete change. The architecture depicted in Figure 1 has two important implications for research on argument linking, including crucially where split marking systems and unaccusativity phenomena are concerned. First, participant structures and lexical aspect are not independent of each other. They are linked via event structure representations which partially, though not completely, determine both. And secondly, to the extent that linking mechanisms critically involve a classification of lexical predicates, it is event structures that are the primary candidate for the information structures linking rules tap into, since it is event structures, not lexical-aspectual or participant structure representations, that are stored with lexical predicates. The facts of argument linking in Yukatek presented in the following sections fully confirm this expectation.

3. Yukatek predicate classes and their argument structures

Yukatek is spoken by approximately 800,000 people living 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). Together with Lakandón, Itzá, and Mopán, it forms the

Yukatekan branch of the Mayan language family (cf. Campbell & Kaufman (1990)). Yukatek may be characterized as a mildly polysynthetic language. It has predominantly agglutinative morphology, and the maximum complexity of word forms is modest compared to certain other Mesoamerican languages (e.g. of the Mixe-Zoquean or Uto-Aztekan families). But Yukatek is an exclusively head-marking language, and it displays rich productive incorporation of nouns and adverbs and compounding of verb stems. Like in other Mayan languages (cf. Van Valin & LaPolla (1997: 282-285) [VVLP]), the organization of grammatical relations in Yukatek is variable, such that ‘pivots’ in the sense of [VVLP] align with different arguments in different constructions. Therefore, the terms ‘subject’ and ‘object’ are avoided here. Instead, to identify the structural arguments of the clause, I resort to [VVLP]’s ‘A’ for transitive arguments receiving an ‘actor’ macro-role, ‘U’ for transitive arguments receiving an ‘undergoer’ macro-role, and ‘S’ for the single argument of intransitives. The basic order of argument noun phrases is fairly rigidly V-S in intransitive clauses and V-U-A in transitive clauses.

In main clauses, distinctions of viewpoint aspect and modality are marked obligatorily in two positions: by a preverbal marker (a prefix in some cases and a morphologically independent form in others), called ‘Aspect-Mood’ (AM) marker here, and by a verb suffix, termed ‘status’ suffix, after Kaufman (1990). In (1), the preverbal slot is occupied by the

imperfective AM marker k-, which conveys habitual or generic reference, and the suffix slot is occupied by a suffix marking ‘incomplete’ status (-il in (1a) and -ik in (1b)). (2) shows perfective AM marking (h=/t-) and complete status (-∅/-ah).¹⁰

- | | | |
|-----|-----------------------------------|---------------------------------|
| (1) | a. <u>Intransitive incomplete</u> | b. <u>Transitive incomplete</u> |
| | k-u=kim-il | k-u=hats’-ik-en |
| | IMPF-A.3=die-INC | IMPF-A.3=hit-INC-B.1.SG |
| | ‘he dies’ | ‘he hits me’ |
| (2) | a. <u>Intransitive complete</u> | b. <u>Transitive complete</u> |
| | h=kim-∅-ih | t-u=hats’-ah-en |
| | PRV=die(CMP)-B.3.SG | PRV-A.3=hit-CMP-B.1.SG |
| | ‘he died’ | ‘he hit me’ |

There are 15 AM markers and four status categories (incomplete, complete, subjunctive, and imperative; there is a fifth category, which, however, does not occur in main clauses). Among the four status categories, the imperative does not combine with AM markers. Selection among the remaining status categories depends on the AM marker. A detailed analysis of the system of AM marking and status inflection is given in Bohnemeyer (1998a, in press). There, the status categories are analyzed in terms of viewpoint aspect and modal ‘assertiveness’. On this account, complete status marks perfectivity and assertive modality; incomplete status marks imperfectivity and assertive modality, and subjunctive status marks

perfectivity and non-assertive modality. As (1)-(2) illustrate, S-arguments show a split marking pattern: they are marked by the so-called ‘set-A’ clitics with incomplete status (1a), but by ‘set-B’ suffixes with the other status categories (2a). In contrast, encoding of transitive A and U is independent of status inflection (compare (1b) and (2b)). Table 1 lists the two paradigms of cross-reference markers; Table 2 summarizes the associations between status categories and argument marking patterns.

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

Table 1. Yukatek cross-reference markers

STATUS CATEGORY	MODAL MEANING	ASPECTUAL MEANING	ARGUMENT MARKING PATTERN
Completive	+ assertive	+ perfective	ergative (S = U)
Subjunctive	- assertive	+ perfective	ergative (S = U)
Incompletive	+ assertive	- perfective	accusative (S = A)

Table 2. Status semantics and argument marking patterns

Table 2 makes it clear that the split in argument marking patterns is

associated with the aspectual value of the status categories: in semantically perfective clauses, marked by completive or subjunctive status, S is marked like U (an ‘ergative-absolutive’-type pattern), while in semantic imperfective clauses, marked for incomplete status, S is treated like A, giving rise to a ‘nominative-accusative’-type pattern. The marking of S-arguments instantiates a pattern that mixes properties of the aspect-conditioned split ergative systems Dixon (1994: 97-101) discusses with properties of Dixon’s (1994: 78-83) ‘split-S’ and ‘fluid-S’-type systems. Just as in ‘split-S’ and ‘fluid-S’-type systems, the marking split is restricted to intransitive clauses. However, the split does not depend on the lexical verb class, so Yukatek is not a ‘split-S’ or ‘active-stative’ language: compare the state-change verb kim ‘die’ in (1a), (2a) to the activity verb meyah ‘work’ in (3a,b):¹¹

(3) a. Intransitive incomplete (activity verb)

k-u=meyah-∅

IMPF-A.3=work(INC)

‘he works’

b. Intransitive completive (activity verb)

h=meyah-**nah-ih**

PRV=work-CMP-B.3.SG

‘he worked’

While argument marking does not directly depend on lexical class

membership, status marking does. Patterns of status allomorphy distinguish a system of five verb stem classes. Each class has a unique set of status allomorphs, listed in Table 3.¹²

Status category Verb class	Incompletive	Completive	Subjunctive	Imperative
active	-∅	<u>-nah</u>	<u>-nak</u>	<u>-nen</u>
inactive	<u>-Vl</u>	-∅	<u>-Vk</u>	<u>-en</u>
inchoative	<u>-tal</u>	<u>-chah</u>	<u>-chahak</u>	n.a.
positional	<u>-tal</u>	<u>-lah</u>	<u>-l(ah)ak</u>	<u>-len</u>
transitive active	<u>-ik</u>	<u>-ah</u>	-∅ / <u>-eh</u>	-∅ / <u>-eh</u>
passive ¹³	<u>\'/ ...-Vl</u>	<u>\'/ ...-ab</u>	<u>\'/ ...-Vk</u>	n.a. ¹⁴
	<u>/ -a'l</u>	<u>/ -a'b</u>	<u>/ -a'k</u>	

Table 3. Yukatek status patterns

Root members of the ‘active’ intransitive class include equivalents of walk, sing, dance, sneeze, etc. ‘Inactive’ roots include equivalents of be born, die, burst, enter, exit, etc. ‘Inchoative’ stems are all derived from stative roots; they designate the externally-caused changes that yield the corresponding states. ‘Positional’ stems are derived from stative or transitive roots and designate externally-caused changes that yield spatial configurations (e.g. ‘sit’, ‘stand’, ‘hang’, ‘be between two things’).

It is argued in section 5 that inactive, inchoative, and positional stems encode state changes, and that this semantic property is reflected in their morphosyntactic behavior, including (at least indirectly) their linking properties. In this respect they may be compared to ‘unaccusative’ verbs in

other languages. A subset of active verb stems are shown in section 6 to be lexically specified for ‘internal causation’ of an activity in the sense of [L&RH]. The property has direct repercussions for argument linking. Therefore, a subset of the active verb stems compares to ‘unergative’ verbs in other languages. However, in view of the split argument marking pattern of Yukatek, the organization of grammatical relations in this language, and general typological considerations, the unaccusativity hypothesis, at least on its configurational interpretation (Burzio 1986), does not seem to apply to Yukatek.¹⁵

More generally, theoretical approaches to argument linking commonly assume that participant roles are linked, not just to morphosyntactic arguments, but to the syntactic functions of these arguments. Such syntactic functions are identified either configurationally (e.g. by distinguishing an ‘internal’ from an ‘external argument’; e.g. in Grimshaw (1990) and [L&RH]) or with reference to grammatical relations like ‘subject’ or ‘(grammatical) pivot’ ([VVLP]), regardless of whether such relations are defined configurationally themselves or not. Both approaches are problematic in their application to Yukatek. The very fact that the single participant of any intransitive verb can be linked to both set-A and set-B, depending on status marking, seems to defy any attempt to characterize the morphosyntactic argument indexed by the argument markers of Yukatek in configurational terms in a way compatible with the ‘extended projection

principle' of Chomsky (1982). And as mentioned, there is no evidence pointing to either set-A or set-B having a privileged association with a particular grammatical relation. Therefore, the linking problem is addressed in this article purely in terms of the mapping of semantic roles onto morphosyntactic arguments as identified by the set-A clitics and set-B suffixes. The limited scope with which 'linking' is discussed here has the consequence that the terms 'argument linking' and 'argument marking' become largely coextensive. Nevertheless they have quite distinct intensions. The cross-reference indices serve to discriminate morphosyntactic arguments, not to mark thematic relations (they certainly do not mark thematic relations with intransitive verbs!). The latter are assigned to the arguments according to those principles of the syntax-semantics interface which are the concern of this article.

As Table 3 shows, active stems are zero-marked for incompletive status, while inactive stems are zero-marked for completive status. This distribution has led several researchers to suggest a motivation of the verb class system in terms of lexical aspect. Lucy (1994) posits that active stems denote Vendlerian activities, inactive stems denote Vendlerian achievements, and transitive stems denote Vendlerian accomplishments (similarly, but somewhat more cautiously, Lehmann 1993). Krämer & Wunderlich 1999 [K&W] argue that active stems lexicalize processes, while inactive, positional, and inchoative stems denote discrete state changes. It is

shown in section 5 that both analyses run afoul of the regular inclusion of ‘degree achievement’ verbs in the inactive and inchoative classes. Degree achievements, lexicalizing state changes without discrete end states, behave aspectually like processes. The status patterns of intransitive verbs thus emerge indeed as motivated by the process-change distinction, but only once state change is understood not in purely aspectual terms, but in terms of more basic event structure representations.

As pointed out by Lehmann (1993) and Lucy (1994), and despite [K&W]’s (p. 447) denial, there is also substantial reason to believe that the system of intransitive classes is motivated either in terms of participant structure features such as agentivity and control or in terms of the event structure feature causativity (it is argued in sections 5-6 that in fact only the latter matters). This evidence comes from the different privileges of members of the intransitive classes to occur as the input or output of certain valence changing operations. Thus, only active intransitives produce ‘applicative’ stems in -t, adding an applied object:

(4) Applicative derivation

a. Túun meyah ich u=kòol.

PROG:A.3 work in A.3=clear\ATP

‘He’s working on his milpa [cornfield].’

b. Túun meyah-t-ik u=kòol.

PROG:A.3 work-APP-INC(B.3.SG) A.3=clear\ATP

‘He’s making his milpa.’

(5) Applicative derivation

a. Túun bàaxal.

PROG:A.3 play

‘He’s playing.’

b. Túun bàax-t-ik le=bòola=o’.

PROG:A.3 play-APP-INC(B.3.SG) DEF=ball=D2

‘He’s playing the ball.’

Inactive intransitives undergo causative derivation, adding a causer linked to the A-argument and reassigning the theme/patient to U:¹⁶

(6) Causative derivation

a. Túun kim-il Pedro.

PROG:A.3 die-INC Pedro

‘Pedro’s dying.’

b. Juan=e’ túun kim-s-ik Pedro.

Juan=TOP PROG:A.3 die-CAUS-INC(B.3.SG) Pedro

‘Juan, he’s killing Pedro.’

(7) Causative derivation

a. Túun lúub-ul le=che'=o'.

PROG:A.3 fall-INC DEF=tree=D2

'The tree is falling.'

b. Juan=e' túun lúub-s-ik le=che'=o'

Juan=TOP PROG:A.3 fall-CAUS-INC(B.3.SG) DEF=tree=D2

'Juan, he's felling the tree.'

[K&W] attempt to explain the semantics of these operations with reference to the lexical-aspectual properties of the bases only. However, there are a number of interesting exceptions. Thus, péek 'move', 'wiggle' is an active stem by its status pattern, but takes causative rather than applicative derivation:¹⁷

(8) Active péek 'move', 'wiggle' undergoing causative derivation

a. Túun péek le=che'-o'b=o'.

PROG:A.3 move(INC) DEF=tree-PL=D2

'The trees are moving.'

b. Le=iik'=o' túun péek-s-ik .

DEF-wind=D2 PROG:A.3 move-CAUS-INC(B.3.SG)

le=che-o'b=o'

DEF=tree-PL=D2

'The wind, it's moving the trees.'

Conversely, hàan 'eat' has an inactive status pattern, but undergoes

applicative rather than causative derivation:

(9) Inactive hàan ‘eat’ undergoing applicative derivation

a. Túun hán-al Pedro.

PROG:A.3 eat-INC Pedro.

‘Pedro is eating.’

b. Pedro=e’ túun hán-t-ik wáah.

Pedro=TOP PROG:A.3 eat-APP-INC(B.3.SG) tortilla

‘Pedro, he’s eating tortillas.’

Finally, verbs of non-internally-caused manner-of-motion like balak’ ‘roll’ and háarax ‘slide’ and some emission verbs like tsíirin ‘buzz’ take applicative -t with causative linking properties (if they transitivity at all):

(10) Active balak’ ‘roll’ undergoing applicative derivation with causative semantics

a. Túun balak’ le=bòola=o’.

PROG:A.3 roll(INC) DEF=ball=D2

‘The ball is rolling.’

b. Pedro=e’ túun balak’-t-ik le=bòola=o’.

Pedro=TOP PROG:A.3 roll-APP-INC(B.3.SG) DEF=ball=D2

‘Pedro, he’s rolling the ball.’

(11) Active tsíirin ‘buzz’ undergoing applicative derivation with causative semantics

a. Túun tsíirin le=tiimbre=o’.

PROG:A.3 buzz(INC) DEF=bell=D2

‘The bell is buzzing.’

b. Pedro=e’ túun tsíirin-t-ik

Pedro=TOP PROG:A.3 buzz-APP-INC(B.3.SG)

le=tiimbre=o’.

DEF=bell=D2

‘Pedro, he’s buzzing the bell.’

Evidently, the participant linked to S in (10a) and (11a) is linked to U in (10b) and (11b), not to A, as in (4b) and (5b). The discrepancy between (4)-(5) and (10)-(11) provides key evidence for the analysis proposed in section 6 according to which the semantic property of internal causation determines the linking properties of transitivized verbs (the intransitive bases in (4)-(5) have this property, while those in (10)-(11) do not). [K&W]’s aspect-based linking mechanism makes the wrong predictions for these verbs.

Finally, detransitivizing operations are also sensitive to the intransitive classification. Antipassivized stems inflect like active intransitives, whereas passivized and anticausativized stems inflect like inactive intransitives:

(12) Argument-structure/voice alternations of p'eh 'chip'a. Active transitive

k-in=p'eh-ik

IMPF-A.1.SG=chip-INC(B.3.SG)

'I chip it'

b. Antipassive

k-in=p'èh

IMPF-A.1.SG=chip\ATP(INC)

'I chip'¹⁸c. Passive

k-u=p'e'h-el tumèen tèn

IMPF-A.3=chip\PASS-INC CAUSE me

'it's chipped by me'

d. Anticausative

k-u=p'éh-el

IMPF-A.3=chip\ACAUS-INC

'it gets chipped' (Bricker et al. 1998: 333)

A semantic analysis of the valence-changing mechanisms that accounts for the exceptions mentioned here is developed in section 6. Together with the analysis of state change representations in section 5, this forms the input to the linking rules proposed in section 7. The following section lays out the analysis [K&W] advance regarding the linking problem in Yukatek.

4. Krämer & Wunderlich's (1999) proposal

The starting point of Krämer & Wunderlich's (1999) ([K&W]) analysis is the observation that Yukatek shows, besides a correlation between status (in their terms, aspect) marking and argument marking, a correlation between status marking and lexical class, as manifest in the status patterns listed in Table 3 above, and an apparent motivation of the different status patterns in terms of lexical aspect. To capture these correlations, they propose two binary features: a linking feature $[\pm lr]$ for 'there is a/no lower role' (see e.g. Wunderlich 1997) and an aspectual feature $[\pm perf]$, spelled out 'perfect' and 'perfective' interchangeably. $[+perf]$ is argued to be carried by the completive status suffixes,¹⁹ and at the same time, inactive, inchoative, and positional verb stems are said to be lexically specified for $[+perf]$ (ignoring the fact that inchoative and positional verbs are overtly marked for both status categories). In contrast, the incompletive status suffixes and the active verb stems are specified for $[-perf]$. The linking properties of an aspect-marked predicate are then computed according to the "aspect-argument role correlation" in (13):

- (13) Correlation between aspectual and linking features in Yukatek
 according to [K&W] (p. 446)

$$[\alpha perf] \leftrightarrow [-\alpha lr]; \alpha \in \{+, -\}$$

That is, 'inherently perfective' (i.e. inactive, inchoative, and positional)

verbs are lexically specified for [-lr], but change to [+lr] under ‘imperfect(ive) aspect’. Conversely, ‘inherently imperfective’ (i.e. active) verbs are lexically specified for [+lr], but change to [-lr] under ‘perfect(ive) aspect’. The motivation for (13) is given as follows: imperfect(ive) aspect denotes the temporal operator ANT, which scopes out the initial phase s' of an event s for assertion; the operator POST, denoted by perfect(ive) aspect, selects the final phase or result state s'' for assertion. ANT, and thus the imperfect(ive), is associated with [+lr], because “the predication ... is shifted more to the beginning of the situation, where, in principle, the effects could still be controlled” ([K&W] p. 454). [K&W] assume that active verbs encode processes and have unmarked reference to the initial phase (ANT, hence [-perf]), while inactive, inchoative, and positional verbs encode state changes and have unmarked result state reference (POST, hence [+perf]). In a nutshell, their proposal reads as follows:

“(...) Yucatec indeed shows an intransitive split; however, this split does not involve a correlation between semantic role (control properties) and subject marking but rather a correlation between inherent aspect and subject marking.” ([K&W]: 439).

Finally, the set-A paradigm of cross-reference markers is specified for the linking feature [+lr] as well, i.e. these function as ergative argument markers, in the sense that the highest-ranking in a hierarchy of thematic roles is assigned to them, while the set-B suffixes are treated as

nominative/absolutive markers, i.e. as unmarked.

This proposal attempts to capture (a) the relationship between the argument marking split of Yukatek and those found in Hindi and Georgian, etc. (with viewpoint aspect as the conditioning factor); (b) the relationship between the Yukatek marking system and split-S systems governed by lexical aspect (through the role of lexical classes); and (c) the relationship between the Yukatek pattern and the plain ergative systems found in certain other Mayan languages (e.g. K'iche', Tojolab'al, Tzeltal, Tzotzil, and Wastek). But unfortunately, at least one property of [K&W]'s analysis in effect obscures all three relationships: namely the assumption that the set-A cross-reference clitics are ergative markers.

There is no strong evidence, in any Mayan language, that the set-A paradigm is either marked or unmarked vis-à-vis the set-B paradigm.²⁰ In those languages with plain ergative marking, it is simply the pattern that establishes set-A as ergative markers. This evidently does not apply to Yukatek. The arguments [K&W] provide in favor of the analysis of the set-A paradigm in terms of ergative markers all rely on the assumption that one of the two paradigms has to be semantically marked: either the set-A clitics are ergative markers, or the set-B suffixes are accusative markers. But the alternative itself – undefended in [K&W] – simply does not seem valid for Yukatek. On the account proposed in section 7 below, the cross-reference markers of Yukatek have neither ergative nor accusative nor

nominative/absolute functions; instead, they are grammatical expressions of the macro-roles of actor and undergoer (cf. [VVLP]), as is the case in so many Native American languages with two paradigms of cross-reference markers (e.g. Hokan, Siouan, Caddoan, Iroquoian). It is this analysis that fully explores the similarity between the Yukatek case and other split intransitive systems. As for the relation between the Yukatek system and other argument marking splits induced by aspect marking, if the set-A clitics are indeed ergative markers, then Yukatek violates the following simple generalization:

“But if a split is conditioned by tense or aspect, the ergative marking is always found either in past tense or in perfective aspect.” (Dixon 1994: 99; emphasis in the original)

This problem is not merely one of terminology – the correlation between imperfectivity and ergative marking is an immediate consequence of rule (13), which does not apply to languages such as Hindi or Georgian. Indeed, [K&W] (p. 470, presumably building on similar considerations in DeLancey 1981, 1985; and Dixon 1979: 93-95; 1994: 98-99) argue that linking in such languages follows a different rationale, which is not based on the degree of control of the actor over the event (which on their account triggers ergative marking under imperfective aspect in Yukatek), but on the relative prominence of actor and undergoer, the less prominent argument receiving marked case (so U is marked accusatively in the

imperfective, while A is marked ergatively in the perfective). Of course, the mechanism in (13) likewise has no basis in any of the Mayan languages with plain ergative patterns.

More important for the purposes of the present article are two other shortcomings of [K&W]'s analysis, which form the main concern of the following two sections. The assumption that state change verbs are inherently perfective is valid at most for verbs that entail discrete end states. But as shown in section 5, the inactive and inchoative classes regularly include 'degree achievement' verbs among their members. These share the aspectual properties of process verbs. Degree achievements present a systematic "mismatch" between state change semantics at the event structure level and atelicity at the level of lexical aspect. The inclusion of degree achievements in the inactive and inchoative classes thus suggests that these classes (or the status patterns that define them) are motivated, not in terms of telicity, but in terms of state change semantics. Although [K&W] set up the mechanism that assigns viewpoint aspect (encoded in terms of their ANT and POST operators), and thus via (13) also linking features, to operate on the process-change distinction, the unmarked assignment of the POST operator, and thus the linking feature [-lr], is not motivated for degree achievements, since these do not even lexicalize end states. The mechanism [K&W] envision operates on lexical-aspectual information, not on event structures.²¹

If the mechanism [K&W] argue to assign status ('aspect') marking properties to verbs based on their meanings fails for degree achievement verbs, it must be expected that [K&W]'s aspect-based approach also makes the wrong predictions for the linking properties of these verbs. This is indeed the case, as a look at the behavior of degree achievements under transitivity shows. [K&W]'s predictions for the linking properties of transitivity verbs read as follows:

(14) Semantics of transitivity verbs according to [K&W] (p. 456)

- a. Causativization of inherently perfective verbs

$$\lambda x \lambda \underline{u} \lambda s \{ \underline{\text{ACT}}(\underline{u}) \ \& \ \text{VERB}(x) \}(s)$$

- b. Affected object in inherently imperfective verbs

$$\lambda \underline{u} \lambda x \lambda s \{ \text{VERB}(x) \ \& \ \underline{\text{AFFECTED}}(\underline{u}) \}(s)$$

The italicized predicate denotes the subevent added by the transitivity operation. Conjunction of predicates in the 'thematic structure' representations [K&W] assume is subject to general coherence constraints, which in (14) force a causal relation between the process component and the result state component. According to (14a), verbs which lexically denote a POST operator (i.e. are inherently perfective) should causativize; according to (14b); process verbs, denoting an ANT operator, should applicativize. This predicts, contrary to fact, that degree achievement verbs applicativize – in fact, they causativize, like all state change verbs.

[K&W] take instances of non-agentive active verbs that applicativize (as in (10)-(11) in section 3) as decisive evidence that argument linking in Yukatek operates on purely aspectual distinctions. The argument backfires badly! As shown in section 6, (14) makes precisely the wrong predictions for cases such as (10)-(11) – the participant of the active base should be assigned [+lr] and thus linked to the set-A clitic (or the added participant is assigned [-lr] and linked to the set-B suffix); but in fact it is just the other way around! As is shown in section 6, this is perfectly regularly and predictably so. The linking properties of transitivized verbs depend exclusively on whether the base encodes a lexical-semantic feature of internal causation.

The evidence from degree achievement verbs shows that the status patterns of Yukatek verbs are indeed motivated in terms of the process-change distinction – but only at the level of event structure representations. Lexical aspect is a much worse predictor of class membership than is event structure. Hence, a linking mechanism that taps into lexical aspect as the sole information of lexical-semantic representation, as proposed by [K&W], fails to account for the Yukatek facts. And indeed, the evidence from non-internally caused process verbs shows that the linking properties of transitivized verbs are not at all predicted by the status patterns of the bases. Like the latter, transitization privileges are also motivated by an event structure distinction – but by a different one, namely the distinction between

internal and external causation.

5. Linking and the encoding of state change in Yukatek verb classes

In this section, it is shown that the highest-level lexical-semantic distinction motivating the status inflection patterns of Yukatek verbs is the distinction between processes and state changes. Active verb stems encode processes, while inactive, inchoative, and positional stems lexicalize state changes, regardless of whether these have discrete result states or not. The latter is the case with ‘degree achievement’ verbs, found regularly in the inactive and inchoative classes. The fact that degree achievement stems have the same transitivity privileges as other intransitive state change verbs, even though they do not lexically entail discrete result states, provides evidence against the aspect-based linking proposal of Krämer & Wunderlich (1999) [K&W].

How is state change semantics assessed empirically? One criterion looks into the conditions under which a predicate behaves (a)telically. As laid out in section 2, verbs of non-discrete incremental change – i.e. degree achievement verbs – are only telic if some ‘degree of change’ (Kennedy & Levin 2001) is specified and atelic otherwise (e.g. The water level rose for five days vs. The water level rose by two meters in five days). A second criterion is provided by grammatical processes that are applicable only to state change verbs. In English, such properties include the attributive use of

the participle and the formation of intransitive resultative constructions (cf. Levin & Rappaport-Hovav 1995). In this respect, degree achievement verbs pattern with verbs of discrete change, not with process verbs (e.g. a grown man, but not *a walked man; to grow tall, but to walk (*/oneself) tired/hungry).

Before the role of telicity as a possible determinant of verb class membership is addressed, a brief digression to consider how telicity is tested in Yukatek seems in order (for details, cf. Bohnemeyer 1998a: 241-269, 418-433; 1998b; 2001; in press). There is no formal distinction between duration adverbials (such as for X time in English) and time-span adverbials (such as in X time) in this language. Likewise, there is no formal distinction between duration verb phrases (such as spend X time in English) and time-span verb phrases (like take X time). There is a distinction between egressive/terminative phase verbs that entail completion (like complete, end, and finish) and those that do not (like cease, quit, and stop). However, unlike English complete, end, and finish (cf. Dowty 1979), the only Yukatek phase verb that entails completion, ts'o'k 'end', also freely combines with process expressions. This means that there is no direct formal reflex of telicity in Yukatek; i.e. there is no co-occurrence restriction sensitive to the telic-atelic distinction (similarly Smith 1996 for Navajo).

There are, however, semantic tests that allow to assess the telicity of a predicate. One criterion concerns event realization. Events denoted by atelic

predicates are realized at any time after their beginning, even if interrupted. In contrast, telic predicates denote events that are only realized once their culmination is reached. Therefore, the test frame under (15) produces affirmative answers with atelic predicates only.

(15) Test frame for realization under cessation

Pedro=e' ts'-u=chúun-ul u=VERB,
 Pedro=TOP TERM-A.3=start\ACAUS-INC A.3=VERB
 káa=h=t'a'n-ih,
 káa=PRV=call\PASS-B.3.SG
 káa=t-u=p'at-ah. Ts'-u=VERB Pedro?
 káa=PRV-A.3=leave-CMP(B.3.SG) TERM-A.3=VERB Pedro
 'Pedro, he had started to VERB, (when/and then) he was called
 (and) quit. Had Pedro VERB-ed?'

205 verbs of all classes have been tested in this frame with five adult native speakers. This test shows verbs of incremental change to be telic if they entail a discrete end state and the theme/patient is specifically quantified. Degree achievement prove to be atelic:

(16) Degree achievements: realization under cessation

Pedro=e' táan u=ka'n-al,
 Pedro=TOP PROG A.3=get.tired-INC
 káa=h=ts'a'b kàafe ti',

káa=PRV=give\PASS(B.3.SG) coffee LOC(B.3.SG)

káa=h=p'íil y=ich.

káa=PRV=open(B.3.SG) A.3=eye

Ts'-u=ka'n-al Pedro? - Ts'-u=ka'n-al.

TERM-A.3=get.tired-INC Pedro TERM-A.3=tire-INC

'Pedro, he was getting tired, (when/and then) coffee was given to him (and) he refreshed (lit. his eyes opened). Had Pedro become tired? - He had become tired (or 'his getting tired was over').'

(17) lists some inactive stems encoding degree achievements that were attested to behave atelically according to (15); (18) adds some inchoative stems.

(17) Some inactive degree achievement verbs that behave atelically in

(15)

ka'n 'get tired'; la'b 'deteriorate'; lúub 'fall'; na'k 'ascend'; t'íil 'last, drag on'; ts'úum 'deflate'; ts'u'k 'rot'.

(18) Some inchoative degree achievement verbs that behave atelically in

(15)

bòox-tal 'blacken'; chichan-tal 'shrink'; káal-tal 'get intoxicated'; kàabal-tal 'sink'; xàan-tal 'become a long time'; úuchben-tal 'age'; úuch-tal 'become long ago'; wi'h-tal 'become hungry'.

There is no reason to consider the status of degree achievements in the

Yukatek lexicon marginal. 15% of all inactive or inchoative stems tested showed degree achievement properties, and the actual percentage of degree achievements in these two classes could well be higher, as the study was not designed with the distinction between discrete vs. non-discrete change in mind.²²

Turning now to grammatical properties directly sensitive to state change semantics, note first of all that degree achievement stems include inchoative stems, which are overtly derived from stative roots by a suffix -tal (cf. (18)). Secondly, like all inactive and inchoative verbs, degree achievement verbs produce derived stative resultative forms in -a'n; cf. (19):

(19) Degree achievement stem ka'n 'get tired' with resultative -a'n

Hach ka'n-a'n-en.

really.get.tired-RES-B.1.SG

'I'm very tired.'

Active intransitives only exceptionally produce this form, and only in combination with completive status inflection. Finally, like all inactive, inchoative, and positional verbs, degree achievement verbs may incorporate the universal quantifier láah, which active intransitives never do:

(20) Degree achievement stem lúub 'fall' incorporating universal

quantifier

Yàan nukuch óox=o':

EXIST(B.3.SG) big breadnut.tree=D2

h=lúub-láah-ih.

PRV=fall-ALL-B.3.SG

'There were huge breadnut trees: they fell completely [in a hurricane].'

The quantifier has scope over either a set of referents or the degree of change. Under the latter reading, the quantifier signals 'total affectedness'.

Taken together, (16)-(20) show that the Yukatek verbs considered degree achievements here indeed encode non-discrete incremental change. Since these verbs do not lexically entail discrete result states, [K&W]'s linking rules for transitivized verbs (cf. (14) above) should treat them on a par with process verbs and thus predict applicativization.²³ Yet, without any known exception, degree achievement verbs exclusively causativize, if they transitivize at all. Consider (7), repeated here for convenience:

(21) Causative derivation with degree achievement lúub 'fall'

a. Túun lúub-ul le=che'=o'.

PROG:A.3 fall-INC DEF=tree=D2

'The tree is falling.'

b. Juan=e' túun lúub-s-ik le=che'=o'

Juan=TOP PROG:A.3 fall-CAUS-INC(B.3.SG) DEF=tree=D2

‘Juan, he’s felling the tree.’

This indicates that the linking properties of transitivized verbs do not depend on the aspectual properties of the base, as [K&W] claim. The point is taken up in the following section, where decisive evidence from process verbs is discussed showing that the crucial determinant of linking with transitivization is in fact causativity.

The evidence from degree achievement verbs raises the question of what are the lexical-semantic properties motivating the status inflection patterns of the four intransitive verb stem classes. A case could be made to the effect that all inactive, inchoative, and positional stems encode state changes, while active verb stems lexicalize processes. This presupposes a unified analysis of all state change predicates, encompassing both discrete and non-discrete change. The further subdifferentiation among the three state change classes can then be motivated in terms of whether the root denotes the result state (inchoatives) or the event of change (inactives and positionals), and whether or not the result state is a temporary spatial configuration (as is the case with positionals).

A unified analysis of predicates of incremental change is provided by Kennedy & Levin (2001) (see also Hay, Kennedy & Levin (1999)). On their account, any predicate of gradual change involves a syntactically optional ‘degree of change’ argument which specifies the degree to which the theme

or patient has changed in the relevant state at the termination of the event. With verbs of creation and verbs of destruction, the degree of change specifies the part of the patient affected by the change at the termination of the event. If no degree is specified, the patient is computed as affected completely. In contrast, degree achievement predicates cannot entail a ‘set terminal point’ (Krifka 1992) unless a degree of change is specified. Hence, e.g., ascend behaves atelically, while ascend 500 meters behaves telically. Kennedy & Levin’s approach permits a unified treatment of all predicates of incremental change, whether they are telic or atelic, that preserves the intuition that they denote an element of change. This treatment can be extended to predicates of non-incremental change, such as denoted by die or burst, which generally affect an animal or object only as a whole, not in parts, by requiring the degree of change to be set to complete affectedness, be it by lexical specification or due to world knowledge.

Based on Kennedy & Levin’s analysis and the facts presented (in an abbreviated manner) in (15)-(21), it can be argued that all and only members of the inactive, inchoative, and positional verb stem classes encode state change. This, then, provides a very strong semantic motivation for the status inflection patterns of these classes.²⁴ Direct evidence against [K&W]’s aspectual linking proposal comes from transitivized degree achievement verbs. On [K&W]’s account, these should share the linking properties of transitivized process verbs, while in fact they share the linking properties of

transitivized state change verbs.

5. Linking and the encoding of causativity in Yukatek verb classes

The goal of this section is to provide a semantic analysis of the valence changing operations introduced in section 3 that accounts for the apparent irregularities in the linking properties of transitivized verbs exemplified in (8)-(11) in section 3. Of particular interest here is the behavior of active stems which denote externally-caused processes, such as balak' 'roll'. Consider (10), repeated here for convenience:

(22) Active balak' 'roll' undergoing applicative derivation with causative semantics

a. Túun balak' le=bòola=o'.

PROG:A.3 roll(INC) DEF=ball=D2

'The ball is rolling.'

b. Pedro=e' túun balak'-t-ik le=bòola=o'.

Pedro=TOP PROG:A.3 roll-APP-INC(B.3.SG) DEF=ball=D2

'Pedro, he's rolling the ball.'

Like all active stems except for péek 'move', 'wiggle' (cf. (8) above), balak' takes the applicative suffix -t when transitivized. However, the linking properties of the transitivized stem balak'-t are those of a causativized stem (cf. (6)-(7) above), not those of an applicativized stem (cf. (4)-(5) above): the participant linked to S in (22a) (the ball) is linked to U in (22b), while a

newly introduced participant understood as the instigator of the rolling event is linked to A. The same behavior is shown by all verbs denoting externally-caused events. This includes all inactive, inchoative, and positional verbs, and among active verbs, some (but not all) verbs of sound emission, like nik'ich 'squeak' and tsíirin 'buzz' (cf. (11) above), and in particular non-agentive verbs of manner of motion, such as balak' 'roll', chiik 'shake', 'rattle', háarax and hiirich, both 'slide', húuy 'stirr', 'agitate', mosòon 'whirl', 'revolve', pi'k 'shake', 'twirl', pirix 'flick', tíit(bal) 'shake', úumbal 'swing', 'rock', walak' 'turn', 'revolve', and péek 'move', 'wiggle' – except that in the case of péek, transitivity actually triggers the putative causative suffix -s of inactive verbs (cf. (8) above).

The number of underived active stems showing this linking pattern is relatively small. One factor contributing to this is a competing lexicalization pattern of 'externally caused' processes (cf. Levin & Rappaport-Hovav 1995 [L&RH]) in transitive roots. These produce derived antipassive stems that denote the corresponding externally-caused processes (e.g. sut 'turn', 'return', 'spin' > sùut 'turn', 'return', 'spin'; bok 'perfume', 'fumigate' > bòok 'smell'). The semantic relation between the intransitive and the transitive stem is the same as in (22) in these cases; the difference is only in the direction of morphological derivation. But more importantly, however small the number of transitive derivatives from active stems that show the linking pattern in (22), there is no reason to consider the linking behavior of

shape (e.g. ‘be round’, ‘bulge’), disposition (e.g. ‘be lax’, ‘be tense’, ‘be drooped’, ‘be coiled around something’), distribution (e.g. ‘be scattered’, ‘be spread out’, ‘be in a pile’), or configuration (e.g. ‘be between two things’, ‘be across or through something’) (cf. Bohnemeyer & Brown in prep.). The events denoted by these verbs are not normally controllable, since they involve inanimate themes. This suggests that control only becomes a property of the verbs in (24) due to the fact that they have animate (mostly human) themes. Put differently, the lexical-semantic representation of all positional verbs specifies externally-caused state change; whether or not this is controlled at the level of participant structure is determined compositionally (and possibly pragmatically), in line with the architecture developed in section 2.

While the linking behavior of transitivized active stems could be explained with reference to both causativity-sensitive rules and control-sensitive rules, the behavior of positional verbs under transitivization only permits the former analysis. Hence, on the most parsimonious analysis, the linking properties of all transitivized verbs in Yukatek are determined by whether or not the base entails internal causation: transitivized verbs derived from bases that denote internally caused events have applicative linking properties, i.e. transitivization adds an applied-object as U, while transitivized verbs derived from bases denoting externally-caused events have causative linking properties, i.e. transitivization adds an instigator role

linked to A. Selection of $\underline{-t}$ vs. $\underline{-s}$ (or the corresponding suffixes of the inchoative and positional classes) as the morphological expression of transitivization is under this assumption independent of the semantics of the process.²⁵ The semantics of transitivized verbs, predicted solely on the basis of whether or not the intransitive base entails internal causation, is summarized in (26) and (27):

(27) Semantics of transitivized verbs from internally-caused bases

$$\begin{aligned} \beta &= [{}_{vt} [\alpha]_{vi}] \ \& \ \alpha' = \lambda x \exists e_1 [\text{PROC}_C(e_1) \ \& \ \text{instigator}(e_1, x)] \\ \Rightarrow \beta' &= \lambda x \lambda y \exists e_1 \exists e_2 [\text{PROC}_C(e_1) \ \& \ \text{instigator}(e_1, x) \\ &\quad \& \ Q(e_2) \ \& \ \text{arg}(e_2, y) \ \& \ \text{CAUSE}(e_1, e_2)] \end{aligned}$$

(27) Semantics of transitivized verbs from externally-caused bases

$$\begin{aligned} \beta &= [{}_{vt} [\alpha]_{vi}] \ \& \ \alpha' = \lambda y \exists e_2 [Q(e_2) \ \& \ \neg \text{PROC}_C(e_2) \ \& \ \text{arg}(e_2, y)] \\ \Rightarrow \beta' &= \lambda y \lambda x \exists e_1 \exists e_2 [\text{PROC}_C(e_1) \ \& \ \text{instigator}(e_1, x) \\ &\quad \& \ Q(e_2) \ \& \ \text{arg}(e_2, y) \ \& \ \text{CAUSE}(e_1, e_2)] \end{aligned}$$

These rules are stated in the formalism introduced in section 2. Q represents a generic event predicate. Internally caused processes are denoted by PROC_C , which entails the thematic relation of instigator.²⁶ (26) states that an intransitive verb that entails an internally caused process under transitivization denotes an additional unspecified event caused by the process. (27) specifies that any intransitive verb that entails an externally-caused event under transitivization denotes an additional internally caused process that causes the event. This leaves open the possibility that the

intransitive base denotes a process itself, to account for the causative semantics of transitivized non-agentive verbs of manner of motion or sound emission, as discussed above. Neither rule requires transitivized verbs to entail state change (transitivized verbs of non-agentive manner of motion or sound emission do not). Both rules presuppose that only process predicates may entail internal causation.²⁷

The semantics of detransitivized stems is given in (28)-(30):

(28) Semantics of antipassive stems

$$\beta = [\text{via } [\alpha]_{\text{vt}} \setminus \text{ATP}]$$

$$\begin{aligned} & \& \alpha' = \lambda x \lambda y \exists e_1 \exists e_2 [\text{PROC}(e_1) \& \text{arg}(e_1, x) \& Q(e_2) \& \text{arg}(e_2, y) \\ & \qquad \qquad \qquad \& \text{CAUSE}(e_1, e_2)] \end{aligned}$$

$$\Rightarrow \beta' = \lambda x \exists e_1 [\text{PROC}(e_1) \& \text{arg}(e_1, x)]$$

(29) Semantics of anticausative stems

$$\beta = [\text{vii } [\alpha]_{\text{vt}} \setminus \text{ACAUS}]$$

$$\begin{aligned} & \& \alpha' = \lambda x \lambda y \exists e_1 \exists e_2 [Q(e_1) \& \text{arg}(e_1, x) \& P(e_2) \\ & \qquad \qquad \qquad \& \text{arg}(e_2, y) \& \text{CAUSE}(e_1, e_2)] \end{aligned}$$

$$\Rightarrow \beta' = \lambda y \exists e_2 [P(e_2) \& \text{arg}(e_2, y)]$$

(30) Semantics of passive stems

$$\beta = [\text{vii } [\alpha]_{\text{vt}} \setminus \text{PASS}]$$

$$\begin{aligned} & \& \alpha' = \lambda x \lambda y \exists e_1 \exists e_2 [Q(e_1) \& \text{arg}(e_1, x) \& P(e_2) \\ & \qquad \qquad \qquad \& \text{arg}(e_2, y) \& \text{CAUSE}(e_1, e_2)] \end{aligned}$$

$$\Rightarrow \beta' = \lambda y \exists x \exists e_1 \exists e_2 [P(e_2) \& \text{arg}(e_2, y)]$$

& PROC_C(e₁) & instigator(e₁,x) & CAUSE(e₁,e₂)]

P represents a second generic event predicate. (28)-(30) presuppose that only transitive verbs which encode a causal relation between two subevents detransitivize. Antipassives denote the causing event, while anticausatives and passives denote the caused event. (28) requires the antipassive stem to denote a process, but leaves open whether this process is itself internally caused or not, on account of examples such as sut ‘turn’, ‘return’, ‘spin’ > sùut ‘turn’, ‘return’, ‘spin’, as mentioned above. (29) and (30) do not require anticausative and passive stems to denote state changes. The overwhelming majority certainly do; however, apparent exceptions are contact verbs (e.g. hats ‘hit’, koh ‘beat’, yet ‘massage’), which both passivize and anticausativize, even though it is not clear that they entail state change according to the criteria discussed in section 5. The difference between passive and anticausative stems lies in the former, but not the latter, entailing the existence of an instigator causing the event, which, however, is not expressed as a core argument of the predicate.

7. The linking problem revisited

The preceding sections have shown the inadequacies of approaches to argument linking in Yukatek that consider distinctions of either participant structure or lexical aspect (as proposed by Krämer & Wunderlich (1999) [K&W]) the only lexical-semantic properties linking is sensitive to. Degree

achievement verbs pattern with process verbs in terms of their aspectual properties; yet, their linking behavior under transitivization is that of state change verbs. The analysis of transitivized process verbs in section 6 has shown that the linking behavior of these depends not on lexical aspect, but on whether or not the intransitive base entails ‘internal causation’ in the sense of Levin & Rappaport-Hovav (1995) [L&RH]. The evidence from transitivized degree achievement verbs and other transitivized state change verbs, in particular from the behavior of posture verbs under transitivization, allows to generalize this analysis to all transitivized verbs. The aim of this section is to propose an alternative to [K&W]’s aspect-based linking rules of (14) above (section 4) that has the power to reconcile the facts about the linking properties of transitivized verbs with the dependence of argument linking in Yukatek on status marking or, in semantic terms, on viewpoint aspect (see section 3).

To capture the sensitivity of argument linking to event structure representations in Yukatek, it is sufficient to assume a minimal hierarchy of core thematic relations for linking, based on the place of the corresponding subevents in the causal chain expressed by the clause (cf. Croft 1998; Grimshaw 1990):²⁸

- (31) Thematic hierarchy of core argument roles for linking in Yukatek

$$\lambda x \exists e_1 \exists e_2 [\text{arg}(e_1, x) \ \& \ \text{CAUSE}(e_1, e_2)]$$

$$> \lambda y \exists e_1 \exists e_2 [\text{arg}(e_2, y) \ \& \ \text{CAUSE}(e_1, e_2)]$$

(31), couched in the same notation as (26)-(30) above, simply states that the participant of a causing subevent outranks the participant of the caused subevent for linking. This is sufficient to characterize the causality dimension of linking in Yukatek (at least as long as only core argument roles are considered), since Yukatek clauses have a maximum of two core arguments. Notice how the semantics of the transitivity operations ((26)-(27)) in combination with (31) ensure that the instigator of an internally-caused process outranks the argument added by transitivity, while the participant of a non-internally-caused event is outranked by the added argument if transitivity. ²⁹ For other languages, the linking hierarchy may involve additional thematic roles (if the language discriminates more than two core-argument roles), and it may have additional dimensions beside the causal chain of subevents in the event structure.

The particulars of linking vary from language to language, since they depend on the type of argument marking system the language shows. But the rationale stated in (32) seems to underlie all known cases of argument linking governed by aspect marking:

(32) Linking-by-viewpoint

- a. Imperfective viewpoints align with the initial subevent in the causal chain. Hence, linking of the highest-ranking role defines a default for this viewpoint.
- b. Perfective viewpoints align either with the final subevent or the chain as a whole. Hence, if there is a viewpoint-based contrast in linking, linking of the lowest-ranking role sets the default under perfectivity.
- c. Unranked roles are linked according to the default.

(32) ensures ergative-absolutive patterning in perfective clauses and nominative-accusative patterning in imperfective clauses. A mechanism like (32) is envisioned by [K&W] (p. 470) to be at work in languages which contrast marked ergative- or accusative-type cases with unmarked nominative/absolutive-type cases. In such languages, the default defined by the aspectual viewpoint in (32) does double duty: it selects not only the ranked thematic role that the unranked role follows, but also unmarked (nominative/absolutive) case for that role. But under the present proposal, (32) is operative in Yukatek as well. Since Yukatek does not have unmarked arguments, (32) merely serves to accommodate the unranked role of S to that of A or U. The rules of core argument linking in Yukatek are stated in (33):

(33) Principles governing core argument linking in Yukatek

- a. The highest-ranking core-argument role is linked to a set-A-marked argument.
- b. The lowest-ranking core-argument role is linked to a set-B-marked argument.
- c. An unranked core-argument role follows linking-by-viewpoint.

The set-A and set-B cross-reference markers invariably encode the macro-roles of actor and undergoer, respectively, of [VVLP]. This constitutes the fundamental similarity across split-intransitive marking in the Yukatek case and in those ‘split-S’ or ‘fluid-S’ systems found e.g. in Hokan, Siouan, Caddoan, and Iroquoian languages. What makes the Yukatek case distinct is that viewpoint aspect marking, rather than lexical semantics, decides whether the core argument role of intransitive clauses is grammatically treated on a par with an actor or with an undergoer.³⁰ This follows closely the analysis of argument marking in Yukatek proposed by DeLancey (1985). At the same time, the similarity with the cases of plain ergativity found elsewhere in the Mayan language family is preserved as well. These systems differ from that of Yukatek merely in (33c), the unranked argument always patterning with the lowest-ranking one.

8. Conclusions

What semantic factors drive argument linking in languages with split intransitive systems of argument marking? Or, for that matter, in languages with ‘unaccusativity’ phenomena of some other kind, where those are assumed to be effected by linking? Answers to these questions presuppose a clear understanding of the intricate and multi-faceted interactions between aspectual semantics and participant roles. Based on evidence from argument linking in Yukatek, this article has argued for a careful distinction between three semantic information structures: ‘event structure’, ‘participant structure’, and ‘lexical aspect’. Event structures encode the meanings of lexical predicates and event-denoting constructions in terms of subevent decompositions. These lexical and constructional meanings leave lexical-aspectual properties of telicity and durativity and participant structure features such as agentivity and control underspecified, to be fully determined only compositionally. Research on linking that either conflates event structure with participant structure or lexical aspect or assumes participant structure and lexical aspect to form a dichotomy (missing the common ground of event structure) is bound to misstate its case.

Because the relations between event structure, participant structure, and lexical aspect are intricate and subtle, the facts of argument linking in any given language can be quite deceptive. Yukatek, like several other Mayan languages, has a typologically quite rare split intransitive pattern of argument marking controlled by overt aspect-mood marking. Aspect-mood

marking in turn depends on morphological verb classes which at face value may be taken to be semantically motivated in terms of lexical-aspectual properties. And membership in these aspectual classes even seems to govern privileges of undergoing transitivity alternations. These are the apparent facts on which Krämer & Wunderlich (1999) [K&W] argue that the sole lexical-semantic property linking principles are sensitive to in Yukatek is lexical aspect.

Levin & Rappaport-Hovav (1995) ([L&RH]) have pioneered a line of research that exploits systematic lexical mismatches between aspectual and participant semantics as litmus tests for the semantic properties morphosyntactic processes operate on. In the present article, this approach has been brought to bear on the problem of linking in Yukatek. The first test case explored here are degree achievement verbs, which lexicalize incremental change without discrete result states. These form a sizable portion of verbs in the state change classes of aspect-mood marking. Aspectually, they behave just like process verbs; in particular, they are atelic unless explicitly bounded by quantification. This shows that the state change property that motivates the aspect-mood marking patterns of the relevant verb classes is not encoded as a property of lexical aspect, but as a property of more abstract event structure representations. And the linking behavior of transitivized degree achievement verbs is that of transitivized state change verbs, not that of transitivized process verbs, providing first direct counter

evidence against [K&W]'s aspect-based linking analysis for transitivity alternations.

Conclusive evidence regarding the rules that govern linking under transitivity comes from process verbs. A small number of transitivity process verbs share the linking behavior of transitivity state change verbs, contrary to [K&W]'s analysis. The relevant feature distinguishing these from the other process verbs could be either lack of control or lack of 'internal causation' in the sense of [L&RH], building on Smith (1978). The properties of transitivity posture verbs suggest that linking in Yukatek is sensitive to internal causation, not control. Transitivity alternations thus emerge as being governed, not by lexical aspect, but by the distinction of internally- vs. externally-caused events.

Argument linking in Yukatek turns out to be sensitive to just those properties of event structure representations contemporary research shows to be critical in language after language (e.g. Baker (1997); Croft (1998); Dowty (1991); Grimshaw (1990); [L&RH]; Van Valin & LaPolla (1997)). The impact of aspect-mood marking on linking can be accommodated under this analysis by a hierarchy of thematic relations projected from a causal chain of subevents, following Grimshaw (1990) and Croft (1998). The semantics underlying the valence-changing operations determine the place of internally- vs. externally-caused events in this chain. Imperfective aspect focuses on the head-end of the causal chain, treating it as a default for

linking; therefore, linking creates an accusative pattern. Perfective aspect assigns relatively greater weight to the consequences; therefore, linking in perfective clauses treats the tail-end as a default. This rationale appears to underlie all aspect-driven argument marking systems.

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¹ Aspect-governed split intransitive patterns similar to the one of Yukatek are also found at least in Lakandón and Itzá of the Yukatekan branch, Poqomam of the K'iche'an branch, Ixil of the Mamean branch, and all languages of the Ch'olan branch (cf. also Kaufman 1990; Larsen & Norman 1979). The fourth language of the Yucatekan branch, Mopán, shows this pattern with most, but not all, subsets of intransitive verbs (Danziger 1996).

² See Dixon (1994: 100) for references to other languages and language families.

³ Well-known cases in point are the 'active-inactive' system Sapir (1917) postulates for the Siouan language Dakota and the 'active-stative' system of Guaraní described by Klimov (1974). A typology of split-S patterns is presented in Mithun (1991).

⁴ The best-known example of fluid-S marking is the Caucasian language Bats(bi) (or Tsova-Tosh; see Holisky 1987). In this language, the speaker may select a marker for the single argument of some (though not all) intransitive verbs from two paradigms, the choice depending on how much control over the event (s)he wants to assign to the participant. According to Dixon (1994: 78-83), all attested cases of fluid-S marking are of this kind. Note, however, that Holisky's description of Bats and Mithun's (1991) study of split-S systems suggest that fluid-S marking is perhaps better understood as a special property of certain split-S languages, rather than as a distinct type.

⁵ Independently of issues of split intransitivity and unaccusativity, the 'aspectual interface' hypothesis of linking advanced by Tenny 1992 needs to be considered here as well, and the same holds for similar proposals put forth by Ramchand 1997 and van Hout 2000.

⁶ The argumentation in [L&RH] (pp. 166-177) against linking rules based on lexical aspect or agentivity is fully in line with this approach, although it is not based on explicit considerations of representational format.

⁷ Participant structures should not be confused with argument structures. Argument structures specify the kinds of morphosyntactic arguments (and sometimes also some of the adjuncts) a predicate lexeme combines with (i.e. the lexeme's 'valence' or 'subcategorization frame') and the thematic roles that are linked to these arguments (see Goldberg 1995; Grimshaw 1990; [L&RH]; [VVLP]). Participant structures pertain to the sphere of lexical or constructional meaning, while argument structures are part of the syntax-semantics interface. There are morphosyntactic processes that change a predicate's argument structure, but leave its participant and event structures intact (passivization is a case in point, in both English and Yukatek). Thematic roles originate, as it were, in the event structure of a predicate; they are potentially further specified compositionally at the level of participant structure, and finally linked to arguments and adjuncts according to the argument structure properties of the predicate and the construction in which it appears and the general linking rules operating in the language.

⁸ Holisky (1987) points out that Dixon's 'fluid-S' type, as exemplified by Bats (cf. section 1), illustrates linking by agentivity, rather than by the causal properties of the event structure. This explains why linking in this system of argument marking is partially independent of verb semantics.

⁹ It must be noted that the only diagnostics for internal causation offered in Smith (1978) and [L&RH] are precisely those phenomena internal causation is adduced to explain – the distribution of verb types across causative constructions. This lack of independent tests renders the analysis, strictly speaking, circular, leaving consistency and plausibility as the only criteria it may be evaluated by.

¹⁰ The examples in section 2 are simplified for expository purposes, but all verb forms shown are in evidence in elicited and/or recorded data. Examples in the other sections were elicited by me unless indicated otherwise. The orthographic representation in this paper is morphemic rather than morpho-phonemic. The orthography applied is based on Lehmann (1998). In the interlinear morpheme glosses, the following 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; ALL – universal quantifier; ALT – 'alternative' particle (question focus, conditional protasis, disjunctive connective); APP – applicative derivation; ATP – antipassive derivation; B –

set-B cross-reference suffixes; CAUS – causative derivation; CAUSE – causal preposition; CMP – completive status; D2 – distal-deictic/anaphoric particle; DEF – definite determiner; EXIST – existential/locative/possessive predicate; IMPF – imperfective aspect; INC – incomplete status; IRR – irrealis modality; LOC – generic preposition; PASS – passive derivation; PROC – inchoative derivation; PL – plural; PROG – progressive aspect; PRV – perfective aspect; REL – relational derivation (nouns); RES – resultative derivation; SG – singular; TERM – terminative aspect; TOP – topic marker.

¹¹ Yukatek and some other Mayan languages (as mentioned in the introduction) are the only languages in evidence, to the best of my knowledge, with split argument marking, controlled exclusively by aspect marking, occurring in all and only in intransitive clauses. There has been much controversy around this phenomenon. Most Mayanists (e.g. Bricker 1981; Hofling 2000; Robertson 1992) consider the pattern a straight-forward case of split ergativity, ignoring the fact that the split occurs only with intransitive verbs. In contrast, Kaufman 1990 stresses the restriction to intransitive verbs. He terms the pattern ‘mixed-ergative’. Straight 1976 is the first to apply Sapir’s (1917) ‘active-inactive’ to Yukatek. DeLancey 1985 points out that Yukatek indeed falls under Sapir’s definition, but with aspect marking as the conditioning factor, not lexical class as in the example Sapir considers (Dakota) (similarly Pustet 1992 and Bohnemeyer 1998a). Outside Mayan, only cases of more indirect correlations between aspect marking and split intransitivity are known. Thus, in Iroquoian, a split which is otherwise conditioned lexically or by construal is neutralized in certain aspect-mood forms (Marianne Mithun, p.c.; cf. e.g. Merlan 1985 for Seneca and Mithun 1991 for Mohawk). Georgian and other Kartvelian languages have a class of so-called ‘medial’ verbs which follow the case marking pattern of transitive verbs, including the aspect-induced split (Merlan 1985). As already noted by DeLancey 1985, in one language of this family, Mingrelian, all intransitive clauses seem to follow the split (cf. Harris 1991).

¹² /V/ represents a morphophoneme the phonological realization of which is determined by the root vowel. The labels ‘active’ and ‘inactive’, as denoting Yukatek verb stem classes, are introduced in Dayley (1981). Note that [K&W] treat several of the status suffixes of Table 1 as internally complex. This may or may not be correct etymologically in individual cases, but it has no basis in synchronic evidence in any of the cases.

¹³ 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.

¹⁴ 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.

¹⁵ [K&W] (p. 435) claim that the relevant Yukatek facts actually “contradict the essence of the unaccusativity hypothesis.” As far as I can see, they do not explain this view. One could indeed argue that the clear presence of behavioral phenomena comparable to phenomena that have been explained with reference to the unaccusativity hypothesis in other languages (i.e. differences of two classes of intransitive verbs in their privileges of aspect-mood marking and transitivization), along with the simultaneous absence of virtually all preconditions of configurational unaccusativity, provide indirect counter evidence, not against the unaccusativity hypothesis itself, but against the explanation of the relevant phenomena in terms of configurational unaccusativity in other languages.

¹⁶ Inchoative and positional stems take distinct causative morphemes -kVns/-kVnt (where the vowel V depends on the stem vowel and realization of the dental as /s/ or /t/ is in free variation); however, the semantics of these processes is identical to the semantics of the -s-causativization of inactives.

¹⁷ Some other verbs in this class take what appears to be an irregular causative in -Vns; e.g. hùum-ans make.noise-CAUS ‘cause to make noise’. Even though the linking properties of these are parallel to péek-s move-CAUS, and like this fit the account proposed in section 6, I refrain from analyzing these here, since I am unsure of the status of the /Vn/ segment, and since some cases seem to involve coercion-type semantic processes (as e.g. áalkab-ens run-CAUS ‘put to flight’, pointed out to me by Elisabeth Verhoeven – note that the base áalkab ‘run’ is clearly an internally-caused process verb, whereas áalkab-ens denotes externally-caused state change).

¹⁸ One has to wonder how natural (12b) really is. Antipassive forms are only marginally acceptable with verbs of destruction. For backgrounding the patient or theme of destruction events, Yukatek prefers noun incorporation.

¹⁹ [K&W] assume the subjunctive to be aspectually neutral and thus unaffected by the – on their account aspect-induced – marking split. Subjunctive status thus reveals the true ergative nature of the Yukatek argument marking system according to [K&W]. However, thorough analysis in Bohnemeyer (1998: 287-312) shows that the subjunctive has the same aspectual meaning as the completive (see also Lucy 1994), and that all status categories encode both aspectual and modal meanings. Therefore, the analysis advanced in sections 4-6 treats completive and subjunctive status on a par.

²⁰ Many Mayan languages have zero forms for third person singular in Set-B. Dixon (1994: 40) points out that this could be viewed as evidence for a markedness difference, but also cautions (pp. 67-69) that markedness relations are generally far less clear in cross-

reference systems than in systems of nominal case marking. However, note that Yukatek does have marked B.3.SG with intransitive verbs in completive status, presumably originating from a reanalysis of an erstwhile status suffix. How this innovation relates to the development of the aspect-governed argument marking split remains to be investigated.

²¹ [K&W] do not explicate the rationale for the assignment of POST to state change verbs, but do refer to the relevant semantic property as ‘lexical aspect’, and in a later section (pp. 470-471) effectively equate it with telicity. Indeed, telic predications arguably have a strong affinity for perfectivity, while atelic predications have an affinity for imperfectivity (cf. Bohnemeyer & Swift (to appear)). In German, a language without strongly grammaticalized aspect marking, this has the well-known consequence that telic predications in the simple tenses tend to be interpreted perfectly, while atelic predications are interpreted imperfectly. As predicted by this correlation, degree achievements are interpreted by default imperfectly. Consider, for instance, a slogan of the Social Democratic Party during the 2002 federal election campaign: Der Mut wächst, ‘The courage is growing’.

²² For details of this study, see Bohnemeyer (1998a: 241-269; 2001; in press). Many active stems actually show telic behavior on the test in (15), due to the fact that these verbs are denominal and have salient ‘performance object’ readings (cf. Dowty (1979: 69-70)). However, a second test, scope ambiguity with ‘pre-state’ operators comparable to English almost, identifies all active verbs as lexicalizing atelic processes. Again, degree achievement predicates pattern with the process verbs on this test (Barbara Pfeiler, p.c.).

²³ Of course, inactive (but not inchoative) degree achievements, like all members of this class, are “inherently perfective” morphologically, in the sense that they are zero-marked for completive status (though not for subjunctive status, which is likewise perfective). For the linking properties of intransitive inactive stems, this means that the correlation (13) is semantically unmotivated – a theoretically unclear situation (a linking mechanism that disregards the meaning of the predicate). It is argued in Bohnemeyer (in press) that the semantic motivation underlying the formal realization of the status patterns has to be distinguished from the motivation that predicts membership in the classes defined by the status patterns. For the linking behavior of transitivized degree achievements, (14) makes the wrong predictions, regardless of the status pattern of the bases.

²⁴ [K&W] argue that the assignment of verbs to morphological classes is only in part semantically motivated, and partly ‘arbitrary’, as a matter of ‘grammaticalization’ (p. 435), citing a number of apparent exceptions, including bàaxal ‘to play’, chi’bal ‘to bite’, and òokol ‘to rob/steal’, all apparently process verbs in the the inactive class. These stems

happen to end in [V/l] sequences; that the the verbs are members of the active class can be seen from their complete status paradigms (e.g. with bàaxal ‘to play’: completive bàaxal-nah, subjunctive bàaxal-nak, imperative bàaxal-nen). Conversely, a number of supposedly “arbitrarily” (p.447) classified inactive verbs are in fact state change verbs (e.g. úuch ‘to happen’ indeed tests as an achievement, denoting the discrete transition from something not having happened to it having happened). [K&W]’s arguments for ‘arbitrary’, not semantically motivated, assignments of verbs to status classes prove to be invalid.

²⁵ Evidence for the semantics of transitivity depending neither on class membership as per status pattern nor on the -s/-t distinction comes from K’iche’ Maya: in K’iche’, there is only a single transitivity process which may have causative or applicative semantics depending on the base root or stem (Cliff Pye, p.c.).

²⁶ It is assumed here that processes which are not internally caused have an unspecified thematic relation. As far as Yukatek grammar is concerned, this is clearly the case.

²⁷ [L&RH] (pp. 97-98) argue for the marginal existence of internally caused state change verbs in English. Their examples are flower, blossom, bloom, decay, blush, grow, slouch, and loom. A different analysis, which seems closer to Smith (1978), might argue that these are in fact neither internally nor externally caused, but rather not subject to (direct) causation at all (similar, in this respect, to ambience verbs). Yukatek equivalents of [L&RH]’s internally caused state change verbs either denote non-internally-caused state changes (e.g. the equivalents of grow and decay), or they do not transitivity (e.g. the equivalent of flower and bloom).

²⁸ At one or two degrees removed in direct impact, causality plays a role in all linking theories. For instance, being involved in a causing subevent is a ‘proto agent’ property in Dowty (1991).

²⁹ (31) captures the thematic ranking of all transitive verbs of Yukatek, with the possible exception of predicates in which an experiencer outranks a theme, such as il ‘see’, na’t ‘guess’, ‘divine’, ‘reason’, ‘understand’, or kan ‘learn’. Such verbs can be thought of as treating the experiencer as a metaphorical goal with respect to which the theme, an object, fact, or event, changes location (cf. Jackendoff 1990: 262). Pinker (1989: 204-205) argues that this location change is in fact construed as caused by the experiencer’s mental state or sensory activity, under which analysis the verbs in question can be accommodated under (31). Evidence in support of this analysis is provided by the fact that all Yukatek verbs in question both passivize and antipassivize, pointing to a decomposition with a causing process in accordance with (28) and (30) above. Non-causative experiencer predicates such

as sahak ‘be afraid’ and ohel ‘know(ledge)’ are formally stative in Yukatek and thus remain outside the domain of argument linking in verb clauses.

³⁰ It should be stressed, to avoid misunderstanding, that there are important conceptual differences between the treatment of linking proposed here and [VVL]’s ‘Role and Reference Grammar’ (RRG) approach. Thus, RRG places all thematic roles on a hierarchy for linking, not merely those connected by a causal chain. Put differently, there are no unranked thematic roles in RRG. Likewise, all core arguments are linked via macro-roles. There is no real place in RRG for a default linking mechanism that treats a core argument X like some other core argument Y, irrespective of whether an actor or undergoer macro-role is linked to X.