

EXTERNAL ARGUMENTS AND *TER*- IN MALAY*

Soh, Hooi Ling
University of Calgary

0. Introduction

The verbal prefix *ter-* in Malay is associated with three unrelated meanings: adjectival passive (be V-ed), accidental (happened to V) and abilitative (able to V). We argue that the prefix *ter-* has no independent semantic content, and the various interpretations of *ter-* result from *ter-* suppressing certain elements in the argument structure of the verb. Based on the behavior of the prefix *ter-*, we propose a model of argument structure which allows us to modify the semantic roles within the thematic and the aspectual tiers of the argument structure. We propose that argument structure operations include the delinking of a semantic role (thematic and/or aspectual) from the argument. This delinking mechanism permits finer operations on arguments, resulting in a more articulated inventory of argument types.

In section 1, the different types of *ter-*constructions, adjectival, accidental and abilitative, are presented. In section 2, the theoretical assumptions underlying the analysis proposed here are outlined. Based on Grimshaw's (1990), Ritter and Rosen's (1993a,b) and van Voorst's (1987) work, we propose a new model of argument structure representation which involves a formal linking/delinking mechanism between the thematic and aspectual tiers in the argument structure. In section 3, we provide an analysis of *ter-*constructions using the linking/delinking mechanism. We show that *ter-* has no independent semantic content and the different interpretations of *ter-* result from the way *ter-* suppresses certain semantic roles within the argument structure of the verb. In section 4, the conclusions of this paper are presented and some implications of our proposal are explored.

1. Types of *ter-*constructions

When *ter-* attaches to a verb, it forms one of three types of constructions: adjectival, accidental and abilitative *ter-*constructions. Each of these constructions is described below.

1.1 Adjectival *ter-*constructions

Adjectival *ter-*constructions have an adjectival passive reading and are perfective (i.e. the event is completed). The theme (internal argument) in adjectival *ter-*constructions occupies the subject position, and the agent role (external argument) is not expressed. The adjectival *ter-*passive is

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shown in (1a) and it is contrasted with a verbal passive formed by the verbal prefix *di-* in (1b).

- (1) a. Adjectival passive
Pintu itu terbuka (*oleh Ahmad).
door the *ter-* open by Ahmad
'The door was open(ed) (*by Ahmad).'
(stative—e.g. a description of the state of the door.)
- b. Verbal passive
Pintu itu dibuka (oleh Ahmad).
door the *di-* open by Ahmad
'The door was opened (by Ahmad).'
(eventive—e.g. a description of the opening of the door.)

Unlike the verbal passive in (1b), the agent role may not be expressed in adjectival *ter-*passives as shown by the asterisk inside the bracket with the agent *by*-phrase in (1a).

1.2 Accidental *ter-*constructions

In accidental *ter-*constructions, the agent has no intention or volition over the occurrence of the event. This type of construction has perfective aspect. The accidental reading is apparent in the active accidental *ter-*construction in (2a) as it is contrasted with the neutral active sentence in (2b).

- (2) a. Accidental active
Anaknya termakan racun itu.
child-her *ter-*eat poison the
'Her child accidentally ate the poison' (Karim 1978: 112)
or 'Her child happened to eat the poison.'
- b. Neutral active
Anaknya makan racun itu.
child-her eat poison the
'Her child ate the poison.'

The agent is obligatory in accidental *ter-*constructions. This type of construction does not appear in the negative (Haji Omar 1970:17). In (3), when the sentence is negated with the negative marker *tidak*, we cannot get an accidental reading.

- (3) Negative active
Anaknya tidak termakan racun itu.
child-her not *ter-* eat poison the
* 'Her child did not accidentally eat the poison.'
or * 'Her child did not happen to eat the poison.' (Karim 1978:112)

The incompatibility of negation with an accidental reading will be discussed further in section 3 below.

1.3 Abilitative *ter*-constructions

Abilitative *ter*-constructions express the notion that someone is able to do something. Unlike the perfective reading of the accidental constructions, we get an imperfective reading in abilitative *ter*-constructions. The ability reading produced by *ter*- in the active abilitative *ter*-construction in (4a) is contrasted with the neutral active reading associated with the verbal prefix *me*- (an active transitive morpheme) in (4b).

- (4) a. Abilitative active
Ahmad *terbawa* buku yang berat itu.
Ahmad *ter*- carry book which heavy the
'Ahmad is able to carry the book which is heavy.'
- b. Neutral active
Ahmad *membawa* buku yang berat itu.
Ahmad *me*-carry book which heavy the
'Ahmad carries the book which is heavy.'

As in accidental *ter*-constructions, the agent must be realized in abilitative *ter*-constructions. Unlike accidental *ter*-constructions, which cannot appear in the negative, abilitative *ter*-constructions are more common in negative statements (Johns 1976:297). In positive statements such as (2a) and (4a), the sentences are in fact ambiguous between an accidental and an abilitative reading (Haji Omar 1970:20). However when the sentences are negated as shown in (5), the only reading available is the abilitative one.

- (5) Negative active
Ahmad *tidak terbawa* buku yang berat itu.
Ahmad NEG *ter*- carry book which heavy the
'Ahmad is not able to carry the book which is heavy.'
* 'Ahmad did not accidentally take the book which was heavy.'

The ambiguity between an accidental and an abilitative reading in positive statements and the disappearance of this ambiguity in negative structures is crucial to the analysis proposed here.

1.4 Summary

We have seen in section 1.1 to 1.3 above that *ter*- affixation produces three different types of constructions. The properties associated with each type of *ter*-construction are summarized in (6).

(6)

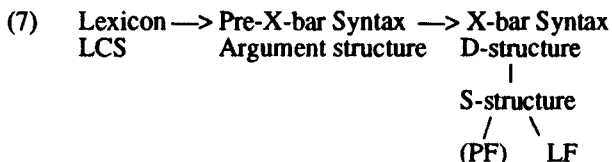
	Adjectival	Accidental	Abilitative
Aspect	perfective	perfective	imperfective
Negative	(not relevant)	positive statements	negative statements
External argument	no agent	requires agent	requires agent

In all three types of *ter*-constructions, the degree of involvement or the participation of the external argument in the event is modified. In adjectival *ter*-constructions, the agent argument cannot be expressed, giving us an event which has no agent argument. In accidental *ter*-constructions, the agent loses control/volition and becomes an unintentional causer. In abilitative *ter*-constructions, the agent does not participate in any event. In the following sections, we show how these effects of *ter*- can be represented formally.

2. Theoretical Assumptions

2.1 The Model of Grammar

Following Ritter and Rosen (1993a,b), we assume the model of grammar shown in (7) which has two pre-D-structure levels: Lexical Conceptual Structure (LCS) (cf. Jackendoff 1987) and Argument structure (cf. Grimshaw 1990).



LCS is considered part of the Lexicon and represents the meaning of a predicate using notions such as CAUSE, GO, AT and variables which represent the arguments of the predicate. Only argument variables project from LCS to Argument structure. Argument structure level is a syntactic level that is not constrained by X-bar theory. It includes information regarding the thematic arguments selected and the structure of the event (Ritter and Rosen 1993a,b). X-bar syntax is the syntactic component of the grammar which is constrained by X-bar theory, and includes D-structure, S-structure, and LF (cf. Chomsky 1981).

2.2 *ter*- and the Level of Argument Structure

We suggest that *ter*- is affixed at the level of Argument structure. One motivation for affixing *ter*- at Argument structure level is that *ter*- modifies the degree of involvement of the argument in the event and provides aspectual information (e.g. the completion of the event (perfective) in accidental and the non-completion of the event (imperfective) in abilitative constructions). Since the Argument structure level is concerned with both the thematic arguments and the aspectual organization of the

event, it is reasonable to suggest that *ter-* is affixed at this level. Furthermore, affixing *ter-* at the Argument structure level allows us to unify the three different *ter-* constructions under one single *ter-* at LCS.

2.3 The Argument Structure Representation: Grimshaw (1990)

Grimshaw (1990) proposes that arguments of the verb are projected with specification of their thematic and aspectual information at the level of Argument structure. The organization of the arguments at the thematic and aspectual tiers is based on a hierarchy of prominence. The ranking for the thematic hierarchy is shown in (9). In this hierarchy, the argument in the outermost bracket is the most prominent and the one in the inner most bracket is the least prominent.

(9) (Agent (Experiencer (Goal/Source/Location (Theme)))) (Grimshaw 1990:8).

The ranking for the aspectual hierarchy is shown in (10), with Cause argument being the aspectually most prominent argument (Grimshaw 1990:24). Grimshaw does not identify any other aspectual roles.

(10) (Cause (other (...)))

The argument-structure representation for eat is illustrated in (11).

(11)	a. I ate the burger.		
	b. eat	(x (y))	argument array
		Agent Theme	thematic tier
		Cause other	aspectual tier

Eat has two arguments: x, y, which are assigned the thematic role Agent and Theme respectively. The argument x also bears the aspectual role Cause in the aspectual dimension and y is associated with an undefined aspectual role. The aspectually most prominent argument, x, is mapped onto the D-structure subject position.

Within Grimshaw's (1990) model, it is possible to suppress an argument such as in the formation of verbal passives. The suppression of the external argument is shown in (12), where \emptyset indicates that the external argument x, which is associated with Agent and Cause roles, is suppressed.

(12)	<u>Verbal passive</u>		
	finish	(x- \emptyset (y))	argument array
		Agent Theme	thematic tier
		Cause other	aspectual tier

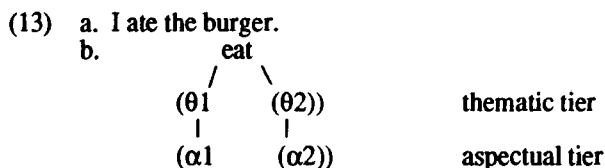
The suppression of the external argument affects the entire argument with its agent and cause roles. Grimshaw's model does not seem to allow us to suppress only the thematic or the aspectual role. Given the different interpretations resulting from affixing *ter-* at the Argument structure level, it seems necessary to allow not only argument structure operations on the arguments as a whole, but also operations which affect only the thematic or the aspectual tier.

2.4 A New Model of Argument Structure Representation

Drawing on some of the proposals in Grimshaw (1990), Ritter and Rosen (1993a,b) and van Voorst (1987), we propose a new model of argument structure representation which allows argument structure operations to affect elements in the thematic and aspectual tiers. Section 2.4.1 introduces the linking mechanism between the thematic and aspectual tiers in the argument structure. In section 2.4.2, we explore the delinking operation in argument structure.

2.4.1 Linking Mechanism

Following Grimshaw (1990), we assume that there are two tiers in the argument structure: a thematic tier and an aspectual tier. As shown in (13), the verb *eat* is linked with two arguments which are assigned both theta and aspectual roles (Ritter and Rosen 1993a). θ -role 1 is thematically more prominent than θ -role 2 and α -role 1 is aspectually more prominent than α -role 2. The formal linking between the theta and aspectual roles is represented by the lines between the aspectual and thematic tiers.



The model proposed here differs from previous models of argument structure in that not only is there a link between the verb and its arguments in the thematic tier, but there is also a link between the thematic and aspectual tiers.

Following van Voorst (1987), we assume that the subject identifies the beginning point of the event and the direct object identifies the end point of the event. Within our terms, this means that the argument with θ -role 1 and α -role 1 identifies the beginning point of the event and the argument with θ -role 2 and α -role 2 identifies the end point of the event. This is consistent with Grimshaw's (1990) proposal that the most prominent aspectual argument is the Causer, and Tenny's (1992) notion that an internal argument measures out or delimits the event.

Following Ritter and Rosen (1993a,b), we assume that aspectual roles signify the participation or involvement of the arguments in the event. We propose that the involvement of the arguments is determined by volitionality for the external argument. Hence, an external argument which has volition is involved in the event and has an aspectual role, while an external argument which has no volition is not involved in the event and has no aspectual role.

2.4.2 Delinking Mechanism

With the establishment of a linking mechanism at the level of Argument structure, it is reasonable to posit an operation of delinking. Delinking means disassociating a certain role from the argument structure. Unlike the delinking used in phonology (e.g. Goldsmith 1990), the

delinking of an element higher up in the representation in this model does not disassociate its dependent elements. Delinking is similar to the notion of suppression in the sense of Grimshaw (1990). Unlike the notion of suppression, which affects only the arguments as a whole, the mechanism of delinking may affect inner components of arguments in terms of their theta roles or aspectual roles. As a result, the delinking operation allows us to make finer distinctions between types of arguments by comparison with a mechanism of suppression.

As the effects of *ter*-center on the external argument of the verb, we will examine all possible manifestations of the delinking operation on the external argument, and ignore how delinking affects the other arguments. Three possible consequences of the delinking operation on the external argument are shown in (14). All these three possible delinking operations are attested in Malay. Two of them, (14b) and (14c), are associated with *ter*-constructions; and the third delinking operation (14d) gives rise to verbal *di*-passives.

(14)

<p>a. no delinking</p>	<p>b. delinking of argument e.g. adjectival passives</p>
$ \begin{array}{ccc} & V & \\ / & & \backslash \\ (\emptyset 1 & (\emptyset 2)) & \\ & & \\ (\alpha 1 & (\alpha 2)) & \\ \text{thematic tier} & & \text{aspectual tier} \end{array} $	$ \begin{array}{ccc} & V & \\ \neq & & \backslash \\ (\emptyset 1 & (\emptyset 2)) & \\ \neq & & \\ (\alpha 1 & (\alpha 2)) & \\ \text{thematic tier} & & \text{aspectual tier} \end{array} $
<p>c. delinking of aspectual role e.g. accidental constructions</p>	<p>d. delinking of theta role e.g. verbal passives</p>
$ \begin{array}{ccc} & V & \\ / & & \backslash \\ (\emptyset 1 & (\emptyset 2)) & \\ \neq & & \\ (\alpha 1 & (\alpha 2)) & \\ \text{thematic tier} & & \text{aspectual tier} \end{array} $	$ \begin{array}{ccc} & V & \\ \neq & & \backslash \\ (\emptyset 1 & (\emptyset 2)) & \\ & & \\ (\alpha 1 & (\alpha 2)) & \\ \text{thematic tier} & & \text{aspectual tier} \end{array} $

In (14a), no delinking occurs, and we find the argument structure representation of an ordinary verb which selects for a thematic external argument. As a thematic argument, it bears both a θ -role and an α -role. In (14b), we find that both θ -role 1 and α -role 1 are delinked. We claim that (14b) is the argument structure representation of an adjectival passive, where there is no implicit argument interpretation. In other words, we suggest that the entire external argument is removed in the formation of adjectival passives. In (14c), we find that α -role 1 is delinked. As the argument with both θ -role 1 and α -role 1 marks the beginning point of the event within this model, we claim that when α -role 1 is delinked, the beginning point of the event cannot be identified. The argument structure representation in (14c) will be shown to be the one characterizing accidental construc-

tions. In (14d), we find that θ -role 1 is delinked. As noted earlier, the delinking of θ -role 1 does not automatically disassociate α -role 1 from the argument. We claim that this is the argument structure representation for verbal *di*-passives and the delinking of θ -role 1 is equivalent to the suppression of the external argument in Grimshaw (1990). The reason we get an implicit argument interpretation in verbal *di*-passives is because α -role 1 remains a participant of the event (see Soh (1994) for further discussion).

3. An Analysis of *ter*-constructions

We suggest in this section that *ter*- has no independent semantic content and the various interpretations of *ter*- result from *ter*- delinking certain elements in the argument structure of the verb to which it attaches. Specifically, we claim that (i) *ter*- delinks α -role 1; and (ii) *ter*- may optionally delink θ -role 1 or α -role 2.

When *ter*- delinks α -role 1, we find accidental *ter*-constructions. When *ter*- delinks both α -role 1 and θ -role 1, we find adjectival *ter*-passives. When *ter*- delinks both α -role 1 and α -role 2, we find abilitative *ter*-constructions. The formation of adjectival passives, accidental and abilitative constructions are discussed below in section 3.1, 3.2 and 3.3 respectively.

3.1 The Formation of Adjectival *ter*-constructions

To form an adjectival passive, both α -role 1 and θ -role 1 are delinked as represented in (15a).

- (15) a.

<u>Basic</u> buka	‘open’	→	<u>Adjectival</u> <i>ter</i> -buka	‘be open(ed)’
/ \			≠ \	
(ø1 (ø2))			(ø1 (ø2))	thematic tier
			±	
(α1 (α2))			(α1 (α2))	aspectual tier
- b. Pintu itu terbuka (*oleh Ahmad).
door the *ter*-open (by Ahmad)
‘The door was open(ed) (* by Ahmad).’

The delinking of both θ -role 1 and α -role 1 removes the entire external argument from the argument structure, and as a result, the external argument is not represented at subsequent levels of representation as shown in (15b). Only the internal argument may be realized.

3.2 The Formation of Accidental *ter*-constructions

In the formation of an accidental construction, α -role 1 is delinked as shown in (16a).

- (16) a. **Basic** makan 'eat'
- | | | |
|-----|-------|--|
| / | \ | |
| (∅1 | (∅2)) | |
| | | |
| (α1 | (α2)) | |
-
- | | | |
|-----|-------|--|
| / | \ | |
| (∅1 | (∅2)) | |
| ± | | |
| (α1 | (α2)) | |
- 'accidentally ate'
- thematic tier
- aspectual tier
- b. Saya **termakan** burger itu.
 I *ter*-eat burger the
 'I accidentally ate the burger.'

As only α -role 1 is delinked and θ -role 1 remains, the agent argument must be present as shown in (16b). As α -role 1 is associated with the involvement of the external argument in the event, and this involvement is determined in terms of volitionality, the delinking of α -role 1 gives us an accidental causer interpretation. Since the argument has no aspectual role, it cannot identify the beginning point of the event. The beginning point of the event becomes non-evident and only the end point of the event is relevant. This is consistent with an accidental interpretation because in accidental events, only the end point is relevant, after which the agent realizes his action.

3.3 The Formation of Abilitative *ter*-constructions

To form an abilitative *ter*-construction, both α -role 1 and α -role 2 are delinked as shown in (17a).

- (17) a. **Basic** makan 'eat'
- | | | |
|-----|-------|--|
| / | \ | |
| (∅1 | (∅2)) | |
| | | |
| (α1 | (α2)) | |
-
- | | | |
|-----|-------|--|
| / | \ | |
| (∅1 | (∅2)) | |
| ± | ± | |
| (α1 | (α2)) | |
- 'able to eat'
- thematic tier
- aspectual tier
- b. Saya **tidak termakan** burger itu.
 I NEG *ter*-eat burger the
 'I am unable to eat the burger.'

As θ -role 1 is not delinked, the agent needs to be realized as shown in (17b). When both α -role 1 and α -role 2 are delinked, the external argument and the internal argument are no longer involved in the event. Hence, there are no participants for the event. This is consistent with an abilitative reading. With the removal of α -role 1 and α -role 2, both the beginning and the end point of the event cannot be identified. This gives us a non-eventive interpretation in abilitative constructions.

3.4 Summary of the Analysis

The argument structures for different *ter*-constructions are illustrated in (18).

(18)

Adjectival	Accidental	Abilitative
$\begin{array}{c} \text{ter-V} \\ \neq \quad \backslash \\ (\emptyset 1 \quad (\emptyset 2)) \text{ thematic tier} \\ \pm \quad \\ (\alpha 1 \quad (\alpha 2)) \text{ aspectual tier} \end{array}$	$\begin{array}{c} \text{ter-V} \\ / \quad \backslash \\ (\emptyset 1 \quad (\emptyset 2)) \text{ thematic tier} \\ \pm \quad \\ (\alpha 1 \quad (\alpha 2)) \text{ aspectual tier} \end{array}$	$\begin{array}{c} \text{ter-V} \\ / \quad \backslash \\ (\emptyset 1 \quad (\emptyset 2)) \text{ thematic tier} \\ \pm \quad \pm \\ (\alpha 1 \quad (\alpha 2)) \text{ aspectual tier} \end{array}$

Adjectival *ter*-passives have both θ -role 1 and α -role 1 delinked; as a result, the agent argument may not be expressed. In accidental *ter*-constructions, only α -role 1 is delinked; resulting in the unintentional causer interpretation in the accidental event. In abilitative constructions, both α -role 1 and α -role 2 are delinked; giving us a non-eventive interpretation in abilitative constructions.

3.5 Evidence

The above analysis is supported by three pieces of evidence: (a) the number of arguments in each type of *ter*-construction; (b) the impossibility of accidental interpretation with negation, and (c) the aspectual interpretations of *ter*-constructions.

We observe that there is one less argument in adjectival *ter*-constructions in comparison with the number of arguments of the base verb before the affixation of *ter*-. The number of arguments in accidental and abilitative *ter*-constructions remains the same. Within our analysis, this is because a θ -role is delinked in adjectival *ter*-constructions but not in either accidental or abilitative *ter*-constructions. In accidental and abilitative *ter*-constructions, only the α -roles are affected.

The second piece of evidence is the impossibility of accidental interpretation with negation. We find that certain *ter*-constructions are ambiguous between an accidental and an abilitative reading as shown in (19).

- (19) Saya termakan burger itu.
 I *ter*-eat burger the
 'I accidentally ate the burger.'
 'I am able to eat the burger.'

When the sentence is negated, we find that the ambiguity between accidental and abilitative readings disappears and the only reading available is the abilitative reading as shown in (20).

- (20) Saya tidak termakan burger itu.
I NEG. *ter*-eat burger the
'I am unable to eat the burger.'
* 'I did not accidentally eat the burger.'

If we assume that negative markers such as *tidak* negate the occurrence of the event, a negative *ter*-construction can refer only to a non-event. The only non-event interpretation available for *ter*-constructions is the abilitative reading. It is not possible to obtain an accidental reading because to get an accidental reading, an event must have occurred.

The third piece of evidence comes from the aspectual interpretation of *ter*-constructions. Our analysis provides an elegant account of the aspectual interpretation of various *ter*-constructions. Recall that adjectival and accidental *ter*-constructions have perfective aspect, while abilitative *ter*-constructions have non-perfective aspect. Given that a perfective event is completed, it must have an end point. The end point of the event is identified by the direct object (van Voorst 1987) or an internal argument which has both a θ -role and an α -role within our model. In adjectival and accidental *ter*-constructions, the internal argument has both a θ -role and an α -role. As a result, the end point of the event is identified, giving us a perfective aspect. In abilitative constructions, the internal argument has only a θ -role and no α -role. As a result, the end point of the event is not properly identified, consistent with a non-perfective aspect.

4. Conclusion

We claim that *ter*- has no independent semantic content and the various interpretations of *ter*- are a consequence of the effects of *ter*- on the argument structure of the verb. In the analysis of *ter*-constructions, we propose a new model of argument structure representation which involves a formal linking/delinking mechanism between the thematic and aspectual tiers in the argument structure. This model of argument structure allows argument structure operations to affect the thematic and the aspectual tiers, enabling finer distinctions to be made regarding argument types.

While Ritter and Rosen (1993a) propose that some arguments have only an aspectual role and no theta role, we suggest that certain arguments in *ter*-constructions have a theta role but no aspectual role. This analysis suggests that there are at least three types of arguments:

- (i) arguments with a theta role and an aspectual role (normal thematic arguments);
- (ii) arguments with an aspectual role only (aspectual arguments);
- (iii) arguments with a theta role only (non-aspectual arguments).

This analysis supports a separate level of Argument structure and a representation of argument structure which includes aspectual information with regards to the structure of the event. It also supports Grimshaw's (1990) and Ritter and Rosen's (1993a,b) insight that the interpretation and mapping of arguments depend on the role the arguments play in the event.

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