LEXICAL DECOMPOSITION AND LOCATIVE PREDICATES IN BONGGI

Michael E. Boutin
Graduate Institute of Applied Linguistics
<*michael_boutin@gial.edu*>

1 Introduction[1]

The purpose of this paper is twofold: 1) to propose an alternative analysis of locative predicates within the theoretical framework of Role and Reference Grammar (RRG); and 2) to provide a semantically based classification of Bonggi locative predicates including both verbs of location and change of location.[2] These two purposes are interconnected in that the proposed alternative analysis is illustrated via the classification of locative predicates.

Within the theory of RRG, locative predicates have traditionally been treated as having two arguments (the located entity and the location), e.g. Foley & Van Valin (1984:53), Jolly (1993:277), Van Valin (1993a:39) and Van Valin & LaPolla (1997:115). Although these predicates have a semantic valency of two, they have a syntactic valency of one in a large number of languages. In order to account for the discrepancy between semantic and syntactic valency, locative predicates have been treated as exceptions in terms of valency correlation within RRG. In the analysis presented here, the location is treated as a predicate, not a referring expression, and therefore these verbs are necessarily intransitive and not exceptions in terms of valency correlation (cf. Van Valin & LaPolla 1997:156).

§2 introduces some key concepts in RRG. §3, the heart of this paper, provides a semantically based classification of Bonggi locative predicates. §4 discusses the advantage of the proposed analysis over previous RRG analyses of locative predicates.

2 Overview of RRG[3]

Predicates are classified into different *Aktionsart* types on the basis of a series of tests which have cross-linguistic validity (Van Valin & LaPolla 1997:93ff.). The tests I use to determine *Aktionsart* types in Bonggi are given in Table 1 (cf. Table 3.1 in Van Valin & LaPolla 1997:94).

[1] I would like to thank Eugene Casad, John Dillon, Mark Miller, David Moody, Bhuvana Narasimhan, Chuck Walton and, especially, Robert D. Van Valin, Jr. for their comments and discussion on earlier drafts of this article.

[2] Bonggi is a Western Austronesian language spoken by approximately 1,400 people on Banggi and Balambangan islands in the Kudat District of Sabah, Malaysia.

[3] The reader is referred to Van Valin (1993b) and Van Valin & LaPolla (1997) for elaboration of the theory.

Mark Alves, Paul Sidwell & David Gil, eds. *SEALSVIII: papers from the 8th meeting of the Southeast Asian Linguistics Society (1998)*. Canberra, Pacific Linguistics, 2007, pp.25-43.

Table 1: *Tests for determining **Aktionsart** type in Bonggi*

Criterion	States	Achieve-ments	Accompl-ishments	Activities	Active accomplishments
1 Occurs with adverb *kosog* 'vigorously'	No	No	No	Yes	Yes
2 Occurs with adverb *peladn-peladn* 'slowly'	No	No	Yes	Yes	Yes
3 Occurs with X for an hour	Yes	No	irrelevant	Yes	irrelevant
4 Occurs with X in an hour	No	No	Yes	No	Yes

A nonverbal locative clause whose predicate is a prepositional phrase is illustrated in (1). The Bonggi clause in (1) differs from its English translation in that there is no copula verb in Bonggi. The absence of a copula verb accounts for the nonverbal nature of such clauses.

(1) *Sia* *di bali* *nya.*
3s.NOM at house 3s.GEN
'**He** is at his house.'[4]

RRG takes the position that clause structure is layered. Table 2 illustrates the relationships between semantic elements and syntactic units involved in the layered structure of the clause (Van Valin & LaPolla 1997:27). The layered structure for (1) is represented by the tree in Figure 1. The clause in Figure 1 consists of the core which contains the nucleus and the argument (*sia* '3s.NOM') of the predicate. The predicate in (1) is a prepositional phrase. Predicative prepositional phrases have a layered structure similar to clauses (Van Valin & LaPolla 1997:53).

Table 2: *The layered structure of the clause*

SEMANTIC ELEMENT(S)	SYNTACTIC UNIT
Predicate	Nucleus
Argument in semantic representation of predicate	Core argument
Non-arguments	Periphery
Predicate + arguments	Core
Predicate + arguments + non-arguments	Clause (= Core + Periphery)

[4] Abbreviations used: ACC accusative, ACH achievement, ACL accomplishment, ACT actor, ACY activity, ARG argument, CAU causative, GEN genitive, INGR ingressive, IRR irrealis, LS logical structure, [MR1] one macrorole, NOM nominative, NP noun phrase, NUC nucleus, P preposition, PP prepositional phrase, pred predicate, PRF perfective aspect, PSA privileged syntactic argument, REAL realis, RRG Role and Reference Grammar, s singular, SR semantic representation and ST stative. The PSA in Bonggi occurs in the English free translation in **bold**. Underlying forms are enclosed in brackets following verbs. The symbols ← and ↔ mean 'assigned/linked.'

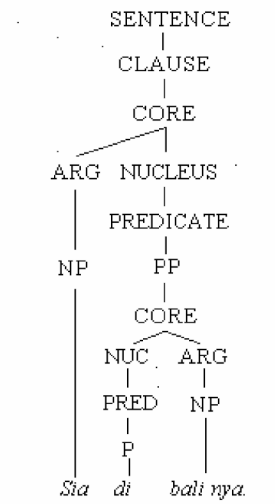


Figure 1: *Layered structure of the clause in (**1**)*

In RRG the relationship between a predicate and its arguments is expressed by **Logical Structures** (LSs). LSs provide a formal semantic representation for each verb and they consist of predicates, their arguments and a small set of operators (Van Valin 1990:223). Semantic representations in RRG are based on Dowty's (1979) theory of verbal semantics in which verbs are classified into states, achievements, accomplishments and activities. Table 3 represents the logical structures for the four basic *Aktionsart* classes (cf. Table 3.3 in Van Valin & LaPolla 1997:102).

Table 3: *Logical Structures for basic **Aktionsart** classes*

Aktionsart type	Logical structure[5]
State	**predicate'** (x) or **predicate'** (x, y)
Achievement	INGR **predicate'** (x) or INGR **predicate'** (x, y)
Accomplishment	BECOME **predicate'** (x) or BECOME **predicate'** (x, y)
Activity	**do'** (x, [**predicate'** (x)]) or **do'** (x, [**predicate'** (x, y)])

Although verbal semantics is primarily concerned with the classification of verbs, nonverbal clauses such as (1) are also given a formal representation. The standard LS for locative statives is shown in (2a). The LS in (2a) indicates that locative stative predicates have the two-place abstract predicate **be-LOC'** (x, y) in their logical structure with 'x' and 'y' being the two arguments (cf. Jolly 1993:277; Van Valin & LaPolla 1997:115). The alternative analysis proposed in this paper is shown in (2b). Both LSs in (2) conform to the second LS for states in Table 3; i.e., **predicate'** (x, y). In (2b) the second argument position 'y' is filled by a predicate which means it cannot function as an argument. (2b) involves an embedded predicate; that is, **pred'** is embedded under **be'**.

[5] The conventions for LSs are as follows: predicates are represented in boldface followed by a prime (**pred'** is an abbreviation for **predicate'**); variables are filled by lexical items from the language being analyzed; and elements in small caps are modifiers of the predicate.

(2) a. LS for locative statives from Van Valin & LaPolla (1997:115): **be-LOC'** (x, y)
b. alternative LS analysis for locative statives: **be'** (x, [**pred'**])

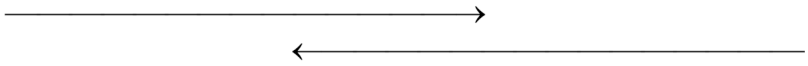
Whereas the proposed LS in (2b) would be the LS for all locative statives, the semantic representation (SR) for (1) would be that shown in (3). In (1) the predicate is the prepositional phrase *di bali nya* 'at his house' and *sia* '3s.NOM' is the entity which is located at the site specified by the predicate.

(3) SR for (1): **be'** (3s, [**be-at'** (*bali* 3s)])[6]

Actor and **undergoer** are the two primary arguments of a transitive predicate, either one of which may be the single argument of an intransitive verb (Van Valin 1993a:43). "Actor and undergoer are generalizations across classes of specific argument positions in logical structure" (Van Valin & LaPolla 1997:142). The relationship between macroroles and argument positions in LS is captured in the Actor-Undergoer Hierarchy in (4) (Van Valin & LaPolla 1997:146). This double hierarchy states that the argument position that is leftmost on the cline will be the actor and the argument position that is rightmost will be the undergoer. This is the unmarked situation; marked assignments to undergoer are possible.

(4) **Actor-Undergoer Hierarchy**

ACTOR UNDERGOER



Arg. of DO	1st arg. of **do'** (x, ...	1st arg. of **pred'** (x, y)	2nd arg. of **pred'** (x, y)	Arg. of **pred'** (x)

[→ = increasing markedness of realization of argument as macrorole]

The number of macroroles a verb takes is either Ø, 1 or 2, and is largely predictable from the LS of the verb (Van Valin 1993a:46-47). Default principles for macrorole assignment are shown in (5).

(5) Default Macrorole Assignment Principles:
a. Number: the number of macroroles a verb takes is less than ornequal to the number of arguments in its LS.
1. If a verb has two or more arguments in its LS, it will take two macroroles.
2. If a verb has one argument in its LS, it will take one macrorole.
b. Nature: for verbs which take one macrorole,
1. If the verb has an activity predicate in its LS, the macrorole is actor.
2. If the verb has no activity predicate in its LS, the macrorole is undergoer.

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6 (3) provides a rough account of the relationship between the elements of the possessive phrase *bali nya* 'his house'. A more detailed SR would represent this relationship in terms of the predicate **have'** as in **be'** (3s, [**be-at'** (**have'** [3s, *bali*])]) where the underlined item (*bali* 'house') functions as the head of the NP.

Since the second argument in (2b) is a predicate, it cannot function as an argument. Thus, despite having two argument positions ('x' and 'y'), locative statives have only one macrorole.[7] This follows from the principle in (5a.2). The nature of the single macrorole is predictable from (5b); that is, the single macrorole in (1) is an undergoer since there is no activity predicate in its LS in (2b).[8]

In the LS configuration **be'** (x, [**pred'**]), **pred'** corresponds to the 'y' argument position in **predicate'** (x, y). The undergoer corresponds to the first argument of **predicate'** (x, y) since it is the rightmost available argument configuration on the cline of the Actor-Undergoer Hierarchy in (4).[9] Therefore, 'x' is the undergoer in the LS configuration **be'** (x, [**pred'**]). In (1) the located entity (*sia* '3s.NOM') is assigned the macrorole status undergoer.

Macroroles provide the primary link between semantic representation and syntactic representation. Once arguments have been assigned to macroroles, actor and undergoer are assigned to specific morphosyntactic statuses (Van Valin 1993a:76). The most important morphosyntactic status is the **privileged syntactic argument** (PSA) which includes both pivots and controllers.

Part of the process involved in assigning actor and undergoer to specific morphosyntactic statuses is case and preposition assignment. Case marking rules make crucial reference to macroroles and direct core argument status (Van Valin 1993a:72). The case marking rules for Bonggi are given in (6). The rules in (6) apply only to direct core arguments in main clauses.[10]

(6) **Case marking rules for Bonggi**

a. The PSA takes NOMINATIVE case.
b. Non-PSA actors take GENITIVE case.
c. Non-PSA undergoers take ACCUSATIVE case.
d. Non-macrorole arguments take DATIVE case as their default case.

Only personal pronouns are inflected for case; otherwise, overt case marking is analytic. Analytic case markers include proclitics (which occur with personal nouns) and prepositions. Only personal pronouns and personal nouns receive overt nominative case marking. Common nouns are not overtly marked for nominative case. For example, because the PSA in (1) is a pronoun, it is inflected for nominative case; i.e., *sia* '3s.NOM'.

To summarize, an RRG analysis of clauses (e.g. (1)) includes a syntactic representation as in Figure 1, a semantic representation as in (3), and a small set of principles for linking the two types of representation. These principles include the default macrorole assignment principles in (4) and (5) and language specific principles for selecting a PSA and assigning case as in (6) (cf. Van Valin & LaPolla 1997:177).

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[7] Compare Van Valin & LaPolla's discussion of internal experience, attributive and identificational stative predicates (1997:125ff., 156).

[8] Activity predicates are predicates with **do'** in their LS (cf. §3.4).

[9] The configuration **pred'** (x) is unavailable because there are two argument positions. Furthermore, although there are two argument positions, there is no 'y' argument; thus, the first available argument configuration in (4) is the first argument of **pred'** (x, y).

[10] Core arguments are arguments represented in the LS of the verb. Direct core arguments are non-oblique syntactic arguments which correspond to arguments in the LS.

3 Classification of Locative Predicates

This section provides a classification of locative predicates in terms of *Aktionsart* classes. §3.1 describes locative states. §3.2 discusses locative accomplishments while §3.3 deals with locative achievements. §3.4 describes activities involving a change of location, §3.5 summarizes active accomplishments and §3.6 introduces other types of predicates whose semantic structure includes locatives.

3.1 *Locative States*

States last or endure through time and are homogenous throughout the period of their existence. Stative situations are basic in the sense that the semantic structure of accomplishments and achievements are derived from states. A general characteristic of states is that they attribute some property to an entity. When the property attributed to an entity is the location of that entity, the result is a locative clause. The location is realized as either a locative prepositional phrase, a deictic adverb or a locative stative verb. This results in two basic types of locative stative clauses in Bonggi, nonverbal and verbal.

3.1.1 Nonverbal Locative States

Nonverbal clauses are defined as clauses whose predicate is not a verb. In nonverbal locative clauses, the location is the clause predicate which is realized in syntax as either a locative prepositional phrase (e.g. (1), (7a) and (7c)) or a deictic adverb (e.g. (9)). The semantic representations (SRs) for (7a) and (7c) are provided in (7b) and (7d). In (7b) the embedded predicate (i.e., **be-inside'**) has its own argument (i.e., *bali* 3s).[11] This argument of the embedded predicate is a possessive phrase whose LS is **have'** (3s, *bali*) in a more detailed SR (cf. footnote 6; cf. also Van Valin & LaPolla 1997:190).

(7) a. *Sia* *di soig* *bali* *nya.*
3s.NOM at inside house 3s.GEN
'**He** is inside his house.'

b. SR for (7a): **be'** (3s, [**be-inside'** (*bali* 3s)])

c. *Sia* *di soig.*
3s.NOM at inside
'**He** is inside.'

d. SR for (7c): **be'** (3s, [**be-inside'** (Ø)])[12]

Based on the overview of RRG presented in §2, (8) is a summary analysis of (7a).

(8) a. LS for locative statives: **be'** (x, [**pred'**])
b. SR for (7a): **be'** (3s, [**be-inside'** (**have'** [3s, *bali*])])
c. Assign macroroles: undergoer ← 1st argument of **pred'** (x, y)
d. Assign syntactic status: PSA ← undergoer '3s'
e. Assign case: PSA (*sia* '3s') ← nominative case

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[11] Cf. the prepositional phrase in the tree in Figure 1; cf. also Figure 2.20a in Van Valin & LaPolla (1997:53).

[12] Since the argument of the preposition is unspecified in (7c), it is represented as Ø in the SR in (7d).

(8a) provides the LS for all locative statives. (8b) is the SR for (7a). Locative statives (e.g. (7a)) have two argument positions, but only one argument. Thus, according to principle (5a.2), they have only one macrorole. The nature of the single macrorole is predictable from (5b.2). (8c) assigns the first argument of **pred'** (x, y) (i.e., '3s') to undergoer according to the Actor-Undergoer Hierarchy in (4). (8d) assigns the undergoer '3s' to the syntactic status of PSA. Finally, (8e) assigns nominative case to the PSA following (6a).

Deictic adverbs can also function as nonverbal locative predicates.[13] There are two sets of spatial deictic adverbs in Bonggi. The first set refers to specific locations which are relative to the speaker as shown in Table 4. The second set, which is shown in Table 5, refers to nonspecific spatial deictics which have more approximate locations than their counterparts in Table 4.

Table 4: *Specific spatial deictics*

diti	'here' (near speaker)
dioo	'there' (not near speaker or addressee, but usually visible)
dia	'there' (used to track referents in discourse)
dii	'yonder' (not visible)

Table 5: *Nonspecific spatial deictics*

*kati*ʔ	'somewhere here' (near speaker)
kenoo	'somewhere there' (not near speaker or addressee, but usually visible)
*kana*ʔ/*kono*ʔ	'somewhere there'
*kuii*ʔ/*kii*ʔ	'somewhere yonder' (not visible)

Any of the spatial deictics in Tables 4 or 5 can function as the predicate in a nonverbal locative clause. For example, the predicate in (9) is the spatial deictic *kati*ʔ 'somewhere here'. A summary analysis of (9) is provided in (10).

(9) *Sia* *kati*ʔ.
3s.NOM here.somewhere
'**He** is somewhere here.'

(10) a. LS for locative statives: **be'** (x, [**pred'**])
b. SR for (9): **be'** (3s, [**here'**])
c. Assign macroroles: undergoer ← 1st argument of **pred'** (x, y)
d. Assign syntactic status: PSA ← undergoer '3s'
e. Assign case: PSA (*sia* '3s') ← nominative case

[13] Although locative prepositional phrases and deictic adverbs belong to different word classes, they have the same functions. Deictic adverbs can be seen as abbreviated prepositional phrases.

3.1.2 Verbal Locative States

The predicate of verbal locative stative clauses is a stative verb. All locative statives share the same LS: **be'** (x, [**pred'**]), regardless of whether they are verbal or nonverbal. (11) illustrates the locative stative verb *me-loub* 'ST-lying.chest.down'. A summary analysis of (11) is provided in (12).

(11) *Sia* *me-loub [m-loub].*
3s.NOM ST-lying.chest.down
'**She** is lying face down.'

(12) a. LS for locative statives: **be'** (x, [**pred'**])
b. SR for (11): **be'** (3s, [**lying-chest-down'**])
c. Assign macroroles: undergoer ← 1st argument of **pred'** (x,y)
d. Assign syntactic status: PSA ← undergoer '3s'
e. Assign case: PSA (*sia* '3s') ← nominative case
f.Mark verb class via affixation: *loub* 'lying.chest.down' ← *m-* 'ST'[14]

(12f) shows that the verb is affixed with the prefix *m-* to indicate that the predicate is a stative verb. *m-* corresponds to **be'** in the LS. Previous discussion did not include marking the verb class via affixation because nonverbal predicates are not affixed.

Three types of prepositions are distinguished in RRG: argument-marking prepositions, adjunct prepositions and argument-adjunct prepositions (Van Valin & LaPolla 1997:159).[15] Prepositions which mark arguments defined by the LS of the verb have a grammatical or case marking function whereas prepositions which mark non-arguments or adjuncts have an adverbial function, e.g. *di* 'at' in (13). The locative phrase *di katil na* 'on the bed' in (13) is not part of the LS of the verb *me-loub* 'ST-lying.chest.down'; instead, it is a locative adjunct which takes the LS of the verb as one of its arguments as seen in (14a). The LS of the event ('she is lying face down') is treated as an entity being located with respect to a spatial reference point ('on the bed') (cf. Van Valin & LaPolla 1997:159). Since the locative adjunct modifies the core as a whole, it takes the LS of the verb as one of its arguments. (14c) shows that locative adjuncts are assigned to the clause periphery and (14d) indicates that the locative adjunct is marked by the preposition *di* 'at'.

(13) *Sia* *me-loub [m-loub]* *di katil na.*
3s.NOM ST-lying.chest.down on bed the
'**She** is lying face down on the bed.'

[14] The prefix vowel in (11) is epenthetic.

[15] Argument-adjunct prepositions are defined in §3.3. A fourth type of preposition is the head of PPs which function as clause predicates in nonverbal locative clauses such as those described in §3.1.1.

SR of *meloub*
'ST-lying.chest.down' & 1st argument of locative adjunct — 2nd argument of locative adjunct

\# ##

(14) a. SR for (13): **be'** ([**be'** (3s, [**lying-chest-down'**])], [**be-at'** (*katil*)])
b. Assign macroroles: undergoer ← 1st argument of **pred'** (x, y)
c. Assign syntactic status: PSA ← undergoer '3s'; periphery ← *katil na* 'the bed'
d. Assign case and prepositions: PSA (*sia* '3s') ← nominative case; locative adjunct (*katil na* 'the bed') ← *di* 'at'
e. Mark verb class: *loub* 'lying.chest.down' ← *m-* 'ST'

When the predicate of a locative stative clause is a verb, locative adjuncts can be either locative prepositional phrases as in (13) or deictic adverbs as in (15a). As seen in (15b), peripheral adverbs are treated as one-place predicates which take the LS of the core as their argument (Van Valin & LaPolla 1997:162).

(15) a. *Sia* *me-loub [m-loub]* *dioo.*
3s.NOM ST-lying.chest.down over.there
'**She** is lying face down over there.'

b. SR for (15a): **over-there'** [**be'** (3s, [**lying-chest-down'**])]

Locative stative verbs are formed by prefixing the verb with *m-* (e.g. *me-loub* 'ST-lying.chest.down' in (15) and *m-ingad* 'ST-near' in (16)). The prefix *m-* indicates that the predicate is a stative verb and corresponds to the logical predicate **be'** in the LS.

(16) *Sia* *m-ingad.*
3s.NOM ST-near
'**It** is near.'

To summarize, the LS for locative statives is **be'** (x, [**pred'**]). Locative states occur in Bonggi syntax as either verbal or nonverbal clauses. Locative stative verbs are marked by *m-* (e.g. (11), (13), (15) and (16)) which corresponds to **be'** in the LS. In nonverbal locative stative clauses, the predicate is either a prepositional phrase (e.g. (1), (7a) and (7c)) or a deictic adverb (e.g. (9)).

3.2 *Locative Accomplishments*

Accomplishments are [-punctual] and contain an underlying stative in their LS. They are derived from states by the addition of the logical operator BECOME which indicates change over some temporal span (Van Valin & LaPolla 1997:104). The LS for accomplishments varies depending upon the type of stative from which a particular accomplishment is derived. Since this paper is concerned with locatives, only accomplishments which have locative statives (i.e., **be'** (x, [**pred'**]) as part of their LS are described. This section shows how the addition of the logical operator BECOME to locative states affects both their semantic and morphological structure.

The addition of the logical operator BECOME to a locative stative indicates a change in location. For example, (17) is an accomplishment which corresponds to the locative stative in (16). The accomplishment predicate *kim-ingad* 'ACL-near' in (17) is derived by adding the prefix *kəm-* to the locative root *ingad* 'near'.[16]

(17) *Sia* *kim-ingad [kəm-ingad].*
3S.NOM ACL-near
'**It** became near.'

The SRs for (16) and (17) are provided in (18a) and (18b). There is no change between locative states and accomplishments in terms of the assignment of macroroles, syntactic status or case. The difference lies in the addition of the operator BECOME to the LS of the accomplishment clause and a concomitant change in verb morphology. Whereas the difference between states and accomplishments is indicated paraphrastically in the English free translations, the difference is indicated morphologically in Bonggi where *m-* occurs with locative stative verbs and *kəm-* occurs with accomplishments.

(18) a. SR for (16): **be'** (3s, [**near'**]) Verb affix: *m-*
b. SR for (17): BECOME **be'** (3s, [**near'**]) Verb affix: *kəm-*

3.3 *Locative Achievements*
Locative achievements are [+punctual]. They are derived from states by the addition of the logical operator INGR 'ingressive' which indicates instantaneous change (Van Valin & LaPolla 1997:104). Most achievement verbs whose LS contains an underlying locative stative are lexicalized in Bonggi; i.e., there is no corresponding locative stative verb. (19) illustrates the achievement verb *ndabuʔ* 'fell'. A summary analysis of (19) is provided in

(19) *Sia* *n-dabuʔ [in-dabuʔ].*
3S.NOM ACH.REAL-fall
'**He** fell.'

(20) a. LS for locative statives: **be'** (x, [**pred'**])
b. LS for achievements with underlying locative: INGR **be'** (x, [**pred'**])
c. SR for (19): INGR **be'** (3s, [**fall'**])
d. Assign macroroles: undergoer ← 1st argument of **pred'** (x, y)
e. Assign syntactic status: PSA ← undergoer '3s'
f.Assign case: PSA (*sia* '3s') ← nominative case
g. Mark verb class: *dabuʔ* 'fall' ← *n-* 'ACH.REAL'

Because locative statives have a single macrorole, achievements which contain an underlying locative stative in their LS also have a single macrorole. As was pointed out for accomplishments in §3.2, there is no change between locative states and achievements in terms of the assignment of macroroles, syntactic status or case. The difference lies in

[16] The prefix vowel /ə/ is realized as [i] due to vowel harmony. *Kəm-* is a phonologically conditioned allomorph. The underlying form is *-m-* which is realized as *kəm-* before vowel-initial roots and roots whose initial consonant is bilabial.

the addition of the operator INGR to the LS of achievements and a concomitant change in verb morphology. Achievement verbs are prefixed by *n-* if realis and *mə-* if irrealis (cf. (20g)).

Locative adjuncts were introduced in §3.1.2. Locative adjuncts have an adverbial function. They are either locative prepositional phrases (e.g. *di katil na* 'on the bed' in (13) and *di gimbatadn* 'on the dock' in (21)) or deictic adverbs (e.g. *dioo* 'over there' in (15a) and (22)).

(21) *Sia* *n-dabuʔ [in-dabuʔ]* *di* *gimbatadn.*
3s.NOM ACH.REAL-fall on dock
'**He** fell on the dock.'

(22) *Sia* *n-dabuʔ [in-dabuʔ]* *dioo.*
3s.NOM ACH.REAL-fall over.there
'**He** fell over there.'

In §3.1.2, I pointed out that RRG distinguishes three types of prepositions; however, only adjunct prepositions were discussed. The remainder of this section summarizes the distinction between adjunct prepositions and argument-adjunct prepositions.

Adjunct prepositions, which are predicates in their own right, take the LS of the verb as one of its arguments. This is illustrated in (25a) where the LS of the verb (i.e., [INGR **be'** (3s, [**fall'**])]) is the first argument in the LS configuration **be'** (x, [**be-on'** (*gimbatadn*)]). Whereas adjunct prepositions are two-place predicates, peripheral adverbs are one-place predicates which take the LS of the core as their argument as illustrated in (25b).

Argument-adjunct prepositions introduce an argument into the clause and share an argument with the LS of the verb rather than taking the LS of the core as an argument (Van Valin & LaPolla 1997:159). Like adjunct prepositions, argument-adjunct prepositions are predicative. Argument-adjunct prepositions are illustrated in (23) and (24) and their SRs in (25c) and (25d). For example, in (25c) the argument-adjunct preposition *kindi* 'to' (represented as INGR **be'** (3s, [**be-at'** (y)]) where 'y' is 'dock') shares the argument '3s' with the LS of the verb.

(23) *Sia* *n-dabuʔ [in-dabuʔ]* *kindi* *gimbatadn.*
3s.NOM ACH.REAL-fall to dock
'**He** fell down to the dock.'

(24) *Sia* *n-dabuʔ [in-dabuʔ]* *tidi* *gimbatadn.*
3s.NOM ACH.REAL-fall from dock
'**He** fell from the dock.'

(25) a. SR for (21): **be'** ([INGR **be'** (3s, [**fall'**])], [**be-on'** (*gimbatadn*)]) (cf. (14a))
b. SR for (22): **over-there'** [INGR **be'** (3s, [**fall'**])] (cf. (15b))

c. SR for (23): INGR **be'** (3s, [**fall'**]) & INGR **be'** (3s, [**be-at'** (*gimbatadn*)])[17]
d. SR for (24): INGR **be'** (3s, [**fall'**]) & INGR NOT **be'** (3s, [**be-at'** (*gimbatadn*)])

LSs in RRG are designed to identify aspects of semantic structure which affect the assignment of macroroles. They are not designed to capture the various shades of meaning which differentiate different members of the same verb class. Thus, other achievement verbs which share the LS INGR **be'** (x, [**pred'**]) and thus belong to the same verb class as *n-dabuʔ* 'ACH.REAL-fall' include *n-tumang* 'ACH.REAL-stranded' (cf. (26)) and the forms shown in (27).

(26) S*ia n-tumang [in-tumang] di Kudat.*
3s.NOM ACH.REAL-stranded at Kudat
'**He** was stranded in Kudat.'

(27)

Realis		Irrealis[18]	
i-kisad	ACH.REAL-slip.off	*mi-kisad*	ACH.IRR-slip.off
i-kusut	ACH.REAL-step.in.hole	*mu-kusut*	ACH.IRR-step.in.hole
i-palis	ACH.REAL-blown	*m-palis*	ACH.IRR-blown
i-pupuʔ	ACH.REAL-fall.off	*m-pupuʔ*	ACH.IRR-fall.off
i-rebaʔ	ACH.REAL-collapse	*me-rebaʔ*	ACH.IRR-collapse
n-suat	ACH.REAL-incur	*mu-suat*	ACH.IRR-incur
n-sulukng	ACH.REAL-caught	*mu-sulukng*	ACH.IRR-caught
n-tabukng	ACH.REAL-fall.into	*me-tabukng*	ACH.IRR-fall.into
n-togob	ACH.REAL-capsize	*me-togob*	ACH.IRR-capsize

To summarize, both locative accomplishments and locative achievements contain an underlying locative predicate in their LS and involve movement of a located entity with respect to a location. The LS for locative accomplishments is BECOME **be'** (x, [**pred'**]), whereas the LS for locative achievements is INGR **be'** (x, [**pred'**]). There is no change between locative states, locative accomplishments and locative achievements in terms of the assignment of macroroles, syntactic status and case. All three types of verbs are intransitive in RRG terms; i.e., they have only one macrorole which is an undergoer.

3.4 *Activities*

Activities are situations which have arbitrary endpoints; i.e., they are inherently unbounded. On the other hand, accomplishments (cf. §3.2) and achievements (cf. §3.3) have natural endpoints; i.e., they are bounded. "For the most part, activity verbs are not derived from stative predicates but are represented as primitive predicates in their own right" (Van Valin 1990:224). The LS for activity verbs is shown in (28a). (28b) illustrates a simple English activity clause and its SR.

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[17] '&' means 'and then' and implies temporal sequence (Foley & Van Valin 1984:51).

[18] Irrealis achievement verbs are marked by the prefix *mə-* indicating a hypothetical situation, e.g. *me-dabuʔ* 'ACH.IRR-fall'. The prefix vowel is deleted before vowel-initial roots and roots whose initial consonant is a bilabial.

(28) a. LS for activity verbs: **do'** (x, [**predicate'** (x)])
b. He swims. **do'** (3s, [**swim'** (3s)])

In (28) **do'** refers to a generalized unspecified activity predicate. **Do**' has two argument positions. The first argument position in (28a) is occupied by 'x', the second by another LS, i.e., [**predicate'** (x)]. Most activity verbs have a single argument which is the first argument of **do**'. The variable 'x' in (28a) refers to both the first argument of **do'** and the only argument of **predicate'**. Because the same variable 'x' is used in both places, these arguments are coreferential. Coreferential arguments are counted as a single argument in LSs. Therefore, the LSs in (28a) and (28b) apply to single argument (one-place) activity predicates.

By (5a.2) one-place activity verbs take one macrorole. By (5b.1) the macrorole must be an actor because the LS contains the activity predicate **do'**. According to (4), '3s' in (28b) is linked to actor. Since this paper deals with locatives, only motion activities are described since they involve movement of an entity with respect to a location.

The activity verb *swim* in (28b) is an example of a motion activity verb. The Bonggi clause which corresponds to (28b) is shown in (29) with a summary analysis in (30).

(29) *Sia* *l-em-ongi [-m-longi].*
3S.NOM -ACY-swim
'**He** swims.'

(30) a. LS for motion activity verbs: **do'** (x, [**predicate'** (x)])
b. SR for (29): **do'** (3s, [**swim'** (3s)])
c. Assign macroroles: actor ← 1st agrument of **do'** (x, ...
d. Assign syntactic status: PSA ← actor '3s'
e. Assign case: PSA (*sia* '3s') ← nominative case
f.Mark verb class: *longi* 'swim' ← *-m-* 'ACY'[19]

The infix *-m-* indicates that the predicate is an activity verb and corresponds to the generalized activity predicate **do'**. That is, there is a direct relationship between **do'** in the LS and the infix *-m-* in non-imperative activity verb clauses.

3.5 *Active accomplishments*

The addition of a definite goal to motion activity verbs results in an active accomplishment because the definite goal provides a temporal boundary for the event. For example, the addition of a definite goal ('to the other side of the river') to the motion activity verb in (29) results in the active accomplishment in (31). A summary analysis of (31) is provided in (32).

(31) *Sia* *l-i-m-ongi [-in--m-longi]* *kindi seborokng* *sungi na.*
3S.NOM -PRF-ACY-swim to other.side river the
'**He** swam to the other side of the river.'

[19] *-m-* is realized as a prefix before vowel-initial roots and roots whose initial consonant is a bilabial obstruent; otherwise, it is infixed after the initial consonant of the stem.

(32) a. LS for motion activities: **do'** (x, [**predicate'** (x)])
b. LS for active accomplishments with locative goal:
do' (x, [**predicate'** (x)]) & BECOME **be'** (x, [**pred'**])
c. SR for (31): **do'** (3s, [**swim'** (3s)]) &
BECOME **be'** (3s, [**be-other-side'** (*sungi na*)])
d. Assign macroroles: actor ← 1st agrument of **do'** (x, ...
e. Assign syntactic status: PSA ← actor '3s'
argument-adjunct ← *sungi na* 'the river'
f. Assign case and prepositions: PSA (*sia* '3s') ← nominative case
sungi na 'the river' ← *kindi seborokng* 'to other side'
g. Mark verb class: *longi* 'swim' ← *-m-* 'ACY'

Active accomplishments can be either goal-oriented or source-oriented. Although active accomplishment verbs have two argument positions in their LS, they have only one argument and one macrorole (cf. Van Valin 1990:227; 1993a:47). By (5b.1) the single macrorole must be an actor because the LS contains the activity predicate **do'**.

The addition of a locative prepositional phrase to motion activity verbs does **not necessarily** result in an active accomplishment. For example, the addition of the locative PP ('in the river') to the motion activity verb in (29) does **not** result in an active accomplishment clause in (33a) because the locative PP is only the site of the activity. In (31) the locative PP is an argument-adjunct (cf. (32e)), whereas in (33a) the locative PP is a locative adjunct which takes the LS of the verb as one of its arguments. The SR for (33a) is provided in (33b).

(33) a. *Sia* *l-em-ongi [-m-longi]* *di sungi.*
3s.NOM -ACY-swim in river
'**He** swims in the river.'
b. SR for (33a): **be'** ([**do**' (3s, [**swim'** (3s)])], [**be-at'** (*sungi*)])

Besides the site at which a motion activity takes place (e.g. (33a)), motion activity verbs can have a source (e.g. (34)), a goal (e.g. (31)) and a path.[20] Like the addition of a definite goal, the addition of a definite source to a motion activity verb also results in an active accomplishment since the definite source provides a temporal boundary for the event. For example, the addition of a definite source ('from the other side of the river') to the motion activity verb in (29) results in the active accomplishment clause in (34).

(34) *Sia* *l-i-m-ongi [-in--m-longi]* *tidi* *seborokng* *sungi na.*
3s.NOM -PRF-ACY-swim from other.side river the
'**He** swam from the other side of the river.'

The only morphosyntactic difference between (31) and (34) is the difference in preposition. This difference is captured in the LS. The LS for source-oriented active accomplishments is: **do'** (x, [**predicate'** (x)]) & BECOME NOT **be'** (x, [**pred'**]). The

[20] Discussion of **path** is beyond the scope of this paper.

difference between this LS and that found in (32b) is that the LS for source-oriented active accomplishments includes the logical operator NOT, whereas the LS for goal-oriented active accomplishments does not. The SR for (34) is: **do'** (3s, [**predicate'** (3s)]) & BECOME NOT **be'** (3s, [**be-other-side'** (*sungi na*)]).

3.6 *Induced states of affairs*

The *Aktionsart* classes described in §3.1-§3.5 depict spontaneous states of affairs; however, states of affairs can also be induced. Induced states of affairs are complex in that one state of affairs brings about another. The LS for induced states of affairs is ϕ CAUSE ψ, where ϕ is a causal state of affairs which induces another state of affairs ψ. The logical operator CAUSE expresses a causal relationship between two states of affairs. The remainder of this section deals with induced locative accomplishments.

§3.2 showed that the LS for locative accomplishments is BECOME **be'** (x, [**pred'**]), while §3.5 pointed out that the LS for active accomplishments is either **do'** (x, [**predicate'** (x)]) & BECOME **be'** (x, [**pred'**]) or **do'** (x, [**predicate'** (x)]) & BECOME NOT **be'** (x, [**pred'**]) depending on whether the clause is goal-oriented or source-oriented. Induced accomplishments differ from locative accomplishments and active accomplishments in that induced accomplishments include at least one CAUSE logical operator in their LS. Causal chains are possible resulting in more complex constructions.

The distinctions between motion activities, active accomplishments, induced accomplishments and causal chains are nicely illustrated by the verb root *uhad* 'to move'. (35) illustrates a motion activity, (36) an active accomplishment, (37) an induced accomplishment and (38) a causal chain. The LSs for these four clause types are contrasted in (39) and their SRs are provided in (40).[21]

(35) *Sia* *m-i-uhad [-in--m-uhad]* *na.*
3s.NOM ACY-PRF-move PERFECT
'**She** has moved.'

(36) *Sia* *m-i-uhad [-in--m-uhad]* *tidi* *Kudat.*
3s.NOM ACY-PRF-move from Kudat
'**She** moved from Kudat.'

(37) *Sia* *i-ng-uhad [-in--ng-uhad]* *dahi* *sindoidn* *nya.*[22]
3s.NOM PRF-ACT-move dirt fingernail 3s.GEN
'**She** removed the dirt underneath her fingernails.'

(38) *Sia* *i-p-uhad [-in-p-uhad]* *diaadn* *tidi* *bali* *nya.*
3s.NOM PRF-CAU-move 1s.ACC from house 3s.GEN
'**She** made me move from her house.'

[21] The accomplishment LSs in (39) are source-oriented.
[22] Since common nouns are not overtly case marked, there is no accusative case marker in (37).

(39) a. LS for motion activities: **do'** (x, [**predicate'** (x)])
b. LS for active accomplishments:
do' (x, [**predicate'** (x)]) & BECOME NOT **be'** (x, [**predicate'**])
c. LS for induced accomplishments where ψ is a locative ccomplishment:
do' (x, [**predicate'** (x)]) CAUSE [BECOME NOT **be'** (y, [**predicate'**])]
d. LS for causative constructions with an embedded locative accomplishment:
do' (w, [**predicate'** (w)]) CAUSE (**do'** (x, [**predicate'** (x)]) CAUSE [BECOME NOT **be'** (x, [**predicate'**])])

(40) a. SR for (35): **do'** (3s, [**move'** (3s)])
b. SR for (36): **do'** (3s, [**move'** (3s)]) & BECOME NOT
be' (3s, [**be-at'** (Kudat)])
c. SR for (37): **do'** (3s, Ø) CAUSE [BECOME NOT
be' (*dahi*, [**be-at'** (**have'** [3s, *sindoidn*])])][23]
d. SR for (38): **do'** (3s, Ø) CAUSE (**do'** (1s, Ø) CAUSE
[BECOME NOT **be'** (1s, [**be-at'** (**have'** [3s, *bali*])])])

Active accomplishments (e.g. (39b)) have one macrorole (an actor), whereas induced accomplishments (e.g. (39c)) have two macroroles. Causative constructions with an embedded locative accomplishment (e.g. (39d)) have a superordinate CAUSE (cf. Van Valin 1993a:85).

The actor is the PSA in (35), (36), (37) and (38). Three classes of verbs are morphologically derived: *-m-* for motion activities and active accomplishments, *ng-* for induced states of affairs whose actor is the PSA, and *p-* for causative constructions.[24] Differences in morphology and corresponding accomplishment type have to do with the degree of control which the actor exercises. When the actor and the entity being moved are coreferential, *-m-* is used indicating a motion activity as in (35) or active accomplishment as in (36). When the actor has direct control over the entity being moved, *ng-* is used indicating an induced state of affairs as in (37). When the actor is a causer who has indirect control over the entity being moved, *p-* is used indicating a causative construction as in (38). Briefly, actors which can be construed as agents have more direct control than causers.

The notion of control explains why some verb roots cannot be used to form induced states of affairs marked by *ng-*. For example, the root *longi* 'swim' cannot be used to form an induced state of affairs marked by *ng-* since the actor does not control another entity while swimming. However, a causative verb can be derived from the root *longi* 'swim' since a causer can make someone else swim although he cannot directly control their swimming, e.g. (41).

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[23] In (40c) and (40d) the second argument position in the ϕ portion of the SR is Ø (i.e., not specified) since the causing activity is not specified (cf. Van Valin 1990:225).

[24] The prefix *ng-* is realized in different ways. The relevant phonological processes are: vowel epenthesis, vowel harmony, vowel weakening and consonant coalescence. The consonant coalescence rule replaces /ŋ-/ and root-initial voiceless consonants with a nasal homorganic to the root-initial consonant. With the exception of a few borrowed words, root-initial voiced bilabials also coalesce with /ŋ-/.

(41) *Sia* *i-pe-longi* [*-in-p-longi*] *anak nya.*
3s.NOM PRF-CAU-swim child 3s.GEN
'**She** made her child swim.'

The accomplishment verbs which have been described thus far in this section are derived from motion activity verb roots (e.g. (36), (37), (38) and (41)). However, there are verb roots (e.g. *ipa*ʔ 'put' in (42)) which can only be used to form induced accomplishments and no activity verbs can be related to them by any surface derivational process. The SR for (42) is provided in (43).[25]

(42) *Sia* *i-ng-ipa*ʔ [*-in-ng-ipa*ʔ] *badi*ʔ *nya* *di tana*ʔ.
3s.NOM PRF-ACT-put machete 3s.GEN on ground
'**He** put his machete on the ground.'

(43) SR for (42): **do'** (3s, Ø) CAUSE [BECOME **be'** (*badi*ʔ, [**be-at'** (*tana*ʔ)])]

This section began by pointing out that the LS for induced states of affairs is ϕ CAUSE ψ, where ϕ is a causal state of affairs and ψ is an induced state of affairs. I have provided a survey of some of the variation that exists in the ϕ and ψ portions of the LS of induced states of affairs and how these differences in meaning correspond to differences in form; for example, the differences between active accomplishments, induced accomplishments and causative constructions (cf. (39)). Although this survey has not been exhaustive, it has provided an overview of some of the most frequent types of induced states of affairs whose ψ portion includes a locative accomplishment.

Actor-PSA are marked by *-m-*, *ng-* or *p-*; *-m-* is used for activities and active accomplishments; *ng-* for induced states of affairs; and *p-* for causative constructions.

4 Conclusion

Previous RRG analyses of locative statives (e.g. Foley & Van Valin 1984:53; Jolly 1993:277; Van Valin 1993a:39; Van Valin & LaPolla 1997:115) assume that these predicates have two arguments, the located entity and the location. On the one hand, because semantic valence in RRG refers to the number of arguments a verb has in its logical structure, locative stative predicates traditionally have a semantic valence of two. On the other hand, locative statives normally have a syntactic valence of one.

The discrepancy between semantic and syntactic valence is normally accounted for by analyzing locative statives as having one macrorole; thus, reducing the semantic valence to one. Although this violates principle (5a.1) in that verbs with two arguments in their LS should take two macroroles, it does not contradict the more general principle in (5a) which states that the number of macroroles a verb takes is less than or equal to the number of arguments in its LS. However, verbs which are exceptions to (5a.1) are marked by a [MRα] feature where 'MR' stands for 'macrorole' and α can have a value of Ø, 1 or 2 depending on the number of macroroles the verb takes (Van Valin & LaPolla 1997:154). In such an analysis, all locative stative verbs and motion verbs end up being marked as [MR1] indicating that they are idiosyncratic and have only one macrorole. Van Valin &

[25] Although (42) is an actor-PSA clause, there is a corresponding undergoer-PSA form.

LaPolla (1997:153ff.) suggest one solution which follows this analysis without having to mark all these verbs as exceptions.

In early 1998, Van Valin suggested to me that it might be possible to analyze locative statives like identificational and attributive constructions. The analysis of locative statives presented in this paper is based on this suggestion and has an advantage over previous analyses in that locative statives are no longer exceptions to (5a.1). Thus, no appeal need be made to the more general principle in (5a) and since locative statives are no longer an exception, they need not be marked in the lexicon as such.

Schwartz (1993:447) posited a lexical rule of predicate creation as another means of accounting for the discrepency between semantic and syntactic valence of attributive and identificational constructions. In my analysis, identificational, attributive and locative stative constructions have the LS **be'** (x, [**pred'**]). In all three types of constructions the second argument position is filled by a predicate which means it cannot function as an argument. In locative stative constructions, the location is treated as a predicate. Since there is only one argument, there can only be one macrorole and there is neither valence discrepancy (cf. Van Valin & LaPolla 1997:125ff., 156) nor a need for a special lexical rule.

The analysis of locative statives in §3.1 was extended to cover both accomplishments (§3.2) and achievements (§3.3) which are derived from locative statives. Furthermore, the analysis of locative prepositional phrases in §3.1.1 was expanded to handle locative adjunct prepositional phrases in §3.1.2 and locative argument-adjunct prepositional phrases in §3.3 and §3.5. Finally, §3.6 introduced different types of induced states of affairs whose resultant state is a locative accomplishment like the accomplishments described in §3.2.

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