Mapping Halkomelem grammatical relations*

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Abstract

Mapping theory, which adds a level of morphosyntactic argument structure to the theory of relational grammar, provides a means for capturing cross-linguistic generalizations heretofore uncharacterizable in "classic" RG. This paper develops a mapping theory treatment of several voice phenomena — applicatives, antipassives, reflexives, and passives — with special reference to data from Halkomelem Salish. The mapping analysis is shown to be better than the "classic" RG analysis in several respects.

1. Relational profiles

Research in relational grammar has yielded much new and interesting information about morphosyntax in the world's languages. The RG view of universal grammar consists of an elaborated list of possible constructions (e.g. passives, unaccusatives, advancements to object) and combinations thereof (e.g. 3-to-2-to-1 advancement), as constrained by universal "laws" (e.g. the *stratal uniqueness law*).[1] Grammars of individual languages detail each construction or combination in terms of the relevant (morpho)syntactic rules of the language (e.g. word order, agreement, relativization). Heretofore, RG has made little attempt to "predict" the array of constructions found in a language and thus has garnered criticism from practitioners of more "explanatory" theories, such as government/binding.[2] However, I show in Gerdts (i.p.) that the constructions available in the grammar of a language are not random, but rather form a systematic pattern, a *relational profile*.

One thing that is quickly apparent to the reader of any RG treatment of a language is that some relational concepts are much more central to the grammar of that language than others. Take Halkomelem (a Salish language of British Columbia), for example. Rules of the grammar pivot

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on the concept *object*, while the concept *indirect object* seems to be irrelevant.[3,4] We can see this by comparing the attested and unattested constructions for Halkomelem given in (1).[5]

(1) Halkomelem constructions:

attested	*unattested*
passives	
unaccusatives	
psych unaccusatives	inversion (1-to-3 retreat)
antipassive	definitive cases of 2-to-3 retreat
reflexives with 1–2 multiattachment	reflexives with 1–3 multiattachment
3-to-2 advancement	initial 3 as final 3
benefactive-to-2 advancement	benefactive-to-3 advancement
other oblique advancements to 2 (directional, causal)	advancements to 3
possessor revalued to 2	possessor revalued to 3
causee-to-2 revaluation	causee-to-3 revaluation

The information in (1) allows us to formulate a relational profile for Halkomelem: it is a direct object–centered language.

An examination of attested vs. unattested constructions in Georgian (Harris 1981) yields a very different picture. As (2) shows, it has an indirect object–centered relational profile that is almost the mirror image of the Halkomelem profile:[6]

(2) Georgian constructions:

attested	*unattested*
passives	
unaccusatives	
inversion (1-to-3 retreat)	
2-to-3 retreat	antipassive
initial 3 as final 3	3-to-2 advancement
benefactive-to-3 advancement	benefactive-to-2 advancement
other advancements to 3 (supressive)	advancements to 2
possessor ascension to 3	possessor ascension to 2
causee-to-2 revaluation (intransitives)	
causee-to-3 revaluation (transitives)	causee-to-2 revaluation (transitives)

In fact, this distinction — direct object–centered vs. indirect object–centered — holds for a large number of languages. Table 1 presents a

Table 1. *Relational profiles*

		Agr	Case	1D	2D	3A	BenA	OblA	Pos	Causee =
A.	Arabic	1	N, A			2				2
	Blackfoot	1, 2	0	2	bare	2	2	Com → 2	2	2
	Chamorro	1, 2	0		bare	2	2		2	2
	Halkomelem	1, 2	0		Obl	2	2	Sti, Dir → 2	2	2
	Ilokano	1, 2	0		Obl	2	2	Sti, Ins, Loc → 2		2, Obl
	Indonesian	——[SVO]——				2	2	Ins, Loc → 2		
	Kalkatungu	1, 2	E, Ab		D	2	2	Sti, Goal, Ins, Loc, Pur → 2	2	
	Nubian	1, 2	A			2	2			2
	Sierra Popoluca	1, 2	0			2	2	Ins → 2 (intr)	2	
	Tzotzil	1, 2	0			2	2		2	2
B.	Albanian	1, 2, 3	N, A, D	3		=3	3	Sti → 2 (intr)	3	3
	Basque	1, 2, 3	E, Ab, D	3		=3	3			intr 2, 3; tr 3
	Choctaw	1, 2, 3	N	3	3	=3	3	Abl → ?	3	2
	Georgian	1, 2, 3	E, N, D	3	3	=3	3	Sup → 3	3	3
	Japanese	0	N, A, D	3	3	=3	3	Loc → 2	2	2, 3
	Polish	1	N, A, D	3		=3	3	Adv → 3		3 (equi union)
	Southern Tiwa	1, 2, 3	0			=3			3	3
	Turkish	1	A, D		3	=3	3			3
	Warlpiri	1, 2, 3	E, Ab, D		3	=3	3	Adv, Com → 3		3
C.	Kinyarwanda	1, 2, 3, 4	[SVO]			=3	=4	Ins, Man, Goal → 4; Loc → 2	3i, 2a	2/3/4

Agr = agreement. N = nominative. A = accusative. D = Dative. E = ergative. Ab = absolutive. 1D = 1 demotion. 2D = 2 demotion. 3A = 3 advancement. BenA = benefactive advancement. OblA = oblique advancement. Com = comitative. Sti = stimulus. Dir = directional. Ins = instrument. Loc = Locative. Pur = purpose. Abl = ablative. Sup = supressive. Adv = adversity. Pos = possessor ascension. Intr = intransitive.

compilation of information concerning the relational profiles of 20 languages for which relationally compatible grammars are available.[7] We see that, with the exception of Kinyarwanda, these languages can be straightforwardly classified as direct object–centered or indirect object–centered.

What property differentiates these three types of languages? The answer is simple: the A, B, and C languages differ in how many nominals they allow as direct arguments. How do we know which nominals are direct arguments in a given language? As often noted (see especially Gerdts 1990 and Everett 1988), direct arguments get core morphosyntactic marking: that is, they determine agreement (or pronoun incorporation or cliticization), license S(tructural)-case (as opposed to I-case [initial level, a.k.a. inherent, thematic, or semantic case]), or appear in a fixed word order (e.g. adjacent to the predicate). Reviewing Table 1, we find that the A, B, and C languages have respectively 2, 3, and 4 *morphosyntactically licensed argument positions* (henceforth MAPs).

Furthermore, nominals that are linked to MAPs are generally more "accessible" than other nominals. For example, they can often be antecedents or targets of reflexives, be relativized, float quantifiers, be passivized, or, sometimes, be raised. In the type A language Nubian (Abdel-Hafiz 1988), 1s and 2s antecede reflexives and raise; in the type B language Albanian (Hubbard 1985), 1s, 2s, and 3s float quantifiers; in the type C language Kinyarwanda (Kimenyi 1980) 1s, 2s, 3s, and BENs relativize and 2s, 3s, and BENs passivize.

What we can conclude from this is that the relational profile of a language is systematically related to its morphosyntactic argument structure. Thus, a theory that can make statements concerning the mapping of grammatical relations to morphosyntactic positions can capture a range of generalizations unavailable to theories that do not make this connection. Gerdts (i.p.) presents a new version of RG that incorporates morphosyntactic argument structure. This paper develops this new view of RG (henceforth, *mapping theory*). I explicate the concepts and devices needed to implement the linking of a grammatical relation to a MAP for a class of core voice phenomena — applicatives, antipassives/antidatives, reflexives, and passives. In so doing, I give analyses of these constructions and their interactions, drawing data mainly from Halkomelem and comparing it in passing to other languages. Next, I contrast this treatment of Halkomelem to my previous treatment within "classic" RG. I show that the mapping analysis is better than the classic RG analysis of Halkomelem in several respects. I conclude that mapping theory provides more insight than classic RG

both into cross-linguistic patterns and into the grammar of an individual language (that is, Halkomelem).

2. Mapping theory

Mapping theory consists of several modules and rules for relating one module to another.[8] Four perspectives on a nominal are encoded. First is its thematic relation. Second is its grammatical relation, corresponding to its initial grammatical relation in classic RG. The grammatical relations are ordered according to the standard RG hierarchy of 1 > 2 > 3 > oblique. Third is its morphosyntactically licensed argument position (MAP), corresponding to its final grammatical relation in classic RG. MAPs are hierarchically arranged according to a case/agreement hierarchy. Fourth is its morphosyntactic presentation, which spells out the language-specific details of case, agreement, etc.

For example, the Japanese clause in (3) is given the mapping theory representation in (4).

(3) John ga Mary ni kunsyoo o atae-ta.
J. NOM M. DAT medal ACC give-pst
'John gave a medal to Mary.'

(4)

thematic relations:	agent	theme	goal
grammatical relations:	1	2	3
	|	|	|
MAPs	A	B	C
presentation:	NOM	ACC	DAT

There are three lexically subcategorized nominals in (3). Each bears a term relation in initial structure and is linked to a MAP. MAPs are ordered positions (represented here as A, B, C) linked to morphological presentational statements (for example, NOM case licenses A, ACC case licenses B, and DAT case licenses C). Presentational details are henceforth omitted in this paper.[9] In any given clause, we assign the number of MAPs based on three things: first, the lexical semantic valence of the verb, second, MAP-reducing or -building morphology, and third, the MAP thresholds set for the language (that is, the maximum and minimum number of MAPs allowed). According to Table 1, Japanese is a three-MAP language — it allows a maximum of three direct arguments. Hence A, B, and C are available for linking in (4).

The universal principles for linking GRs to MAPs are given in (5).[10]

(5) *Saturation principle:*
Every MAP must be linked to a GR or cancelled.
Biuniqueness principle:
(Except in cases of coreference) a MAP is linked to at most one GR and every GR is linked to at most one MAP.
No-delinking principle:
There are no "delinkings."

In addition, individual languages draw from a list of further stipulations on their mapping grammars. For example, in Halkomelem it is possible to exclude all crossing lines from the grammar.[11]

Two types of associations are recognized in the theory. *Unmarked association* proceeds in a vertical, noncrossing, left-to-right fashion. For example, (4) above shows unmarked association in a three-MAP case. *Marked associations*, however, may involve nonvertical linkings, the linking of an "extra" nominal not lexically subcategorized by the verb, the nonlinking of a nominal, or a special stipulation concerning a linked nominal. Marked associations are generally triggered by specific morphological forms. A statement of the conditions on these forms and their effect on argument structure is the biggest task of a mapping grammar. Some aspects of marked association will be specified in universal grammar but other aspects will be subject to parameter setting in individual languages.

Some examples of marked association rules are given in (6); these are illustrated in the following discussion.

(6) i. *applicative:* add a MAP (up to threshold) and link the 3/oblique to the lowest MAP.
ii. *antipassive/antidative:* cancel the lowest MAP and do not link the GR above it.
iii. *reflexive:* link both the 1 and the GR above the lowest MAP to the same MAP (and, in some languages, cancel the lowest MAP).[12]
iv. *passive:* do not link the first GR; cancel one or more MAPs.[13]

Furthermore, a quick perusal of these rules reveals that the lowest MAP is the pivotal position in marked associations (other than passive); it is frequently linked or cancelled. This tendency is captured in the following universal principle.

(7) *Marked association principle:*
Marked associations (other than passive) target the lowest MAP.

Although a thorough discussion of passive is outside the scope of this

paper, I will briefly note that it is often the highest MAP (usually A) that is relevant for the statement of a passive rule. Thus, overall it seems that the edge MAPs (i.e. the highest and the lowest MAPs) are accessible for marked associations. Furthermore, (7) captures the essential difference between the three types of languages in Table 1. These languages differ in their maximum numbers of MAPs. So the lowest MAP (targeted by marked associations) will differ as well.

2.1. *Applicatives*

Let's take a brief look at each of the rules in (6), starting with applicatives. An applicative in any language adds a MAP if possible, then links the 3/oblique to the lowest MAP. For example, Halkomelem has dative applicatives (8) and benefactive applicatives (9).[14]

(8) ni? ʔa:m-əs-θám?š-əs ʔə kʷθə pukʷ
aux give-adv-tr + 1obj-3erg obl det book
'He gave me the book.'

(9) ni? q'ʷəl-əɬc-θám?š-əs ʔə kʷθə sce:ɬtən
aux bake-ben-tr + 1obj-3erg obl det salmon
'He baked me the salmon.'

Since (8) and (9) are lexically transitive and Halkomelem is a two-MAP language, MAPs A and B are available for linking. The applicative cannot add a MAP, since the threshold is two in Halkomelem. Nonetheless, the 3 or oblique is linked to the lowest MAP, that is, B:

(10)

agent	theme	goal/ben
1	2	3/OBL
|		
A	B	

The 1 links by unmarked association. The 2 is unlinked and therefore gets licensed as a nonargument by peripheral means, such as the preposition ʔə in (8) and (9).[15]

Applicatives in Halkomelem can also be formed on initially intransitive clauses, such as the directional applicative in (11).[16]

(11) ʔi yə-ʔéʔwəʔ-nəs-əs ɬə sɬeni?
aux ser-come-dir + tr-3erg det woman
'He's coming toward the woman.'

As (12) shows, the lexical valence of the motion verb in (11) is one, so MAP A is assigned. The applicative adds MAP B (added MAPs are represented in italics) and the oblique links to it.

(12)

agent	dir
1	OBL
|	|
A	*B*

We see that the applicatives in (8) and (9) vs. (11) differ in whether or not they add a MAP, but they are alike in that the 3 or oblique nominal links to the lowest MAP.

Applicatives in three-MAP languages support this approach. Georgian (Harris 1981) has pairs like (13a) and (13b).

(13) a. gelam šeḳera axali šarvali
Gela-ERG he-sewed-it-II-I new trousers-NOM
merabisatvis.
Merab-for
'Gela made new trousers for Merab.'

b. gelam šeuḳera axali šarvali
Gela-ERG he-sewed-him-it-II-I new trousers-NOM
merabs
Merab-DAT
'Gela made new trousers for Merab.'

In (13a) the benefactive is an unlinked oblique nominal presented with a postposition, as represented in (14).

(14)

agent	theme	ben
1	2	OBL
|	|	
A	B	

The representation for (13b), a benefactive applicative, is given in (15).

(15)

agent	theme	ben
1	2	OBL
|	|	|
A	B	*C*

Georgian is a three-MAP language, so MAP C is added (represented in italics) and the benefactive links to it. The 1 and 2 link by unmarked association.

Furthermore, the marked association principle assures that the benefactive links to C — not B as in Halkomelem, thus ruling out the structure in (16).

(16) * agent theme ben
1 2 OBL
| ×
A B C

2.2. *Antipassives/antidatives*

Let's look next at demotion phenomena.[17] Halkomelem has a rule of antipassive (Hukari 1976, 1979; Gerdts 1988b), the effects of which can be seen by comparing the transitive clause in (17a) with the antipassive in (17b):

(17) a. ni q'ʷəl-ət-əs θə sɬeni? tθə sce:ɬtən
aux cook-tr-3erg det woman det salmon
'The woman cooked the salmon.'
b. ni q'ʷəl-əm θə sɬeni? ʔə tθə sce:ɬtən
aux cook-intr det woman obl det salmon
'The woman cooked the salmon.'

The transitive clause in (17a) has a transitive suffix on the verb, ergative agreement, and two plain nominals. The antipassive in (17b) has an intransitive suffix and no ergative agreement, and the patient nominal is presented with a preposition.

In mapping theory, the transitive clause involves unmarked association, as in (18). The antipassive involves cancelling the lowest MAP (represented in lower-case and angled brackets) and not linking the 2.

(18) active transitive
agent theme
1 2
| |
A B

(19) antipassive
agent theme
1 2
|
A ⟨b⟩

A three-MAP language like Southern Tiwa shows a parallel rule of demotion, although, as predicted by the marked association principle, MAP C (not MAP B) is targeted. Allen and Frantz (1983) discuss data like (20), where the crucial difference between the (a) and (b) sentences is that in the former the goal is termlike, while in the latter it is not.

(20) a. ta-khwien-wia-ban seuanide
1SG:3iSG:3iSG-give-PAST man
'I gave the man the dog.'

b. ti-khwien-wia-ban seuanide-'ay
1SG:3iSG-give-PAST man-to
'I gave the dog to the man.'

Under a mapping anlaysis, a ditransitive clause like (20a) would be represented as in (21). Three nominals link, so three nominals agree.

(21)

agent	theme	goal
1	2	3
|	|	|
A	B	C

A mapping analysis for (20b) is given in (22).

(22)

agent	theme	goal
1	2	3
|	|	
A	B	⟨c⟩

In the "antidative" in (22), the C is cancelled and the 3 is not linked. The 3, being a final nonargument, does not agree but rather is presented with a postposition.

2.3. *Reflexives*

Reflexives show similar properties. In many languages, including Halkomelem, reflexives show detransitivization effects. For example, there is no ergative agreement in a reflexive clause like (23).

(23) ni k'^{w}ələš-θət ɬə Mary
aux shoot-tr+ref det M.
'Mary shot herself.'

To account for the semantic transitivity of (23), we posit two GRs — 1 and 2. To account for its intransitive final structure, we posit multiattachment and cancellation: the 1 and 2 both link to the A-slot, and the B-slot is cancelled.[18] Thus, (23) would be represented as in (24).

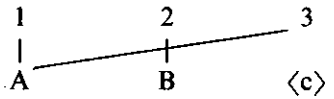
(24)

agent	theme
1	2
| /	
A	⟨b⟩

Three-MAP languages may also have structures like (24) in monotransitive clauses. Furthermore, in ditransitive clauses, the marked association

principle predicts that the nominal above the C MAP in three-MAP languages can be multiattached. We see this in Italian (Rosen 1988), for example, (25) as represented in (26).

(25) Eva si è data tutto il merito.
'Eva gave herself all the credit.'

(26) 

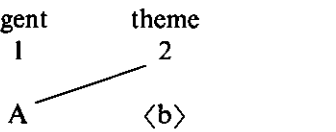
We see then that multiattached reflexives are sensitive to the MAP threshold of a language.[19]

2.4. *Passive*

Finally, let's take a quick look at passives. The essential schema for passives is that the first GR will be unlinked. Furthermore, at least one MAP will be cancelled. However, which MAP will be cancelled is subject to parameterization. The run-of-the-mill passive seen in many languages involves cancelling the B MAP and linking the 2 to the A MAP. We see this, for example, in Lushootseed (a Coast Salish language closely related to Halkomelem). Data adopted from Hess (1973) illustrate transitive (27a) and passive (27b) clauses.

(27) a. ʔu č'ax^{ω}a-t-*sid* ti č'ač'as
asp club+tr-2obj set boy
'The boy clubbed you.'
b. ʔu č'ax^{ω}at-b *čax^{ω}* ʔə ti č'ač'as
asp club+tr-intr 2sub obl det boy
'You were clubbed by the boy.'

In the transitive clause in (27a), the second person theme shows up as objective agreement. In the passive in (27b), intransitive morphology is added to the predicate, and the theme appears as a subjective clitic. This kind of passive is represented in (28): the 2 links to A and hence appears in subjective form, the B is cancelled, and the unlinked 1 is a nonargument, presented as a prepositional phrase.

(28) 

The Halkomelem passive demonstrates an alternative pattern.

(29) ni cən ləm-əθamə
aux 1-sub look-tr + 2obj
'I looked at you.'

(30) ni ləm-əθa:m ʔə ɬə sɬeniʔ
aux look-tr + 2obj + intr obl det woman
'You were looked at by the woman.'

(29) shows a transitive clause with the second person theme as an objective suffix. In the passive (30), the second person theme, which tests to be the sole direct argument of the clause, likewise appears as an objective suffix.[20] The structure in (31) accommodates this fact.

(31)

agent	theme
1	2
	|
⟨a⟩	B

In Halkomelem, the 2 links to B and the A is cancelled.[21] Lushootseed and Halkomelem passives are minimally distinct. They both have the same verbal morphology and the same way of presenting passive agents. But because A cancels in Lushootseed while B cancels in Halkomelem, the themes are linked differently.

A discussion of passives in three-MAP languages is beyond the scope of the present paper. However, we find that such languages vary as to which grammatical relation — the 2, the 3, or either — is mapped in passives. In two-MAP languages, this issue does not arise, as the mapping of a 3 (or oblique) involves a marked association. It is possible in many languages, such as Halkomelem, for the marked associations involving applicatives and passives to combine. The applicative passive in (32) is given the structure in (33).

(32) niʔ ʔa:m-əs-t-əm ʔə ɬə sɬéniʔ ʔə kʷθə pukʷ
aux give-adv-tr-intr obl det woman obl det book
'He was given the book by the woman.'

(33)

1	2	BEN
		/
⟨a⟩	B	

The marked association for applicatives involves the linking of the BEN to the lowest available MAP. Passive involves the cancelling of the A MAP and the nonlinking of the 1. Thus the cooccurrence of applicatives and passive is possible.

3. Classic RG vs. mapping theory

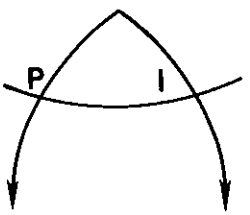
This brief summary of mapping theory serves to illustrate its basic concepts and devices. The key to clause-level morphosyntax in each language is the MAP threshold, that is, the number of direct argument positions allowed in the language. Furthermore, the grammar of a language will choose from a set of universal marked associations like those in (6). Some details of marked association structures are subject to parameterization.

In this section, I briefly contrast the mapping analysis of Halkomelem with the classic RG treatment that I have put forth in Gerdts (1988b) and elsewhere. I begin by giving a minigrammar of Halkomelem with analyses of the constructions covered so far in this paper.

An unergative clause is represented as in (34), a monotransitive as in (35).

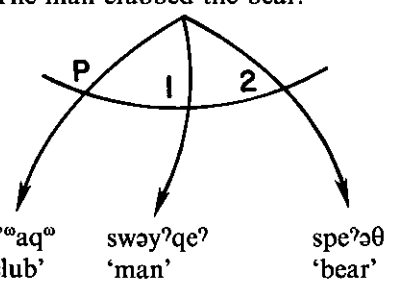
(34) a. ni ʔiməš ɬə sɬeniʔ
aux walk det woman
'The woman walked.'

b.



(35) a. ni q'ʷaqʷ-ət-əs tᶿə swəyʔqeʔ tᶿə speʔəθ
aux club-tr-3erg det man det bear
'The man clubbed the bear.'

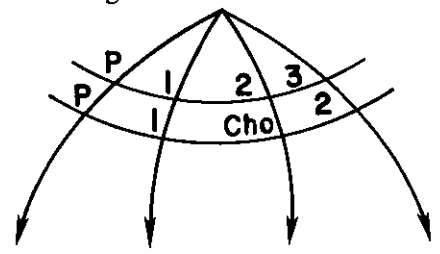
b.



The applicative in (36) shows 3-to-2 advancement: the initial 2 is placed en chômage.

(36) a. ni ʔa:m-əs-t-əs kʷθə swəyʔqeʔ ɬə sɬeniʔ ʔə kʷθə
aux give-adv-tr-3erg det man det woman obl det
snəxʷəɬ
canoe
'The man gave the woman the canoe.'

b.

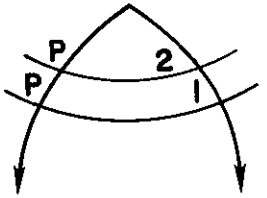


ʔa:m- swəyʔqeʔ snəxʷəɬ sɬeniʔ
'give' 'man' 'canoe' 'woman'

The unaccusative in (37) and the passive in (38) involve 2-to-1 advancement.

(37) a. ni qʼʷəl tᶿə sceːɬtən
aux bake det salmon
'The salmon baked.'

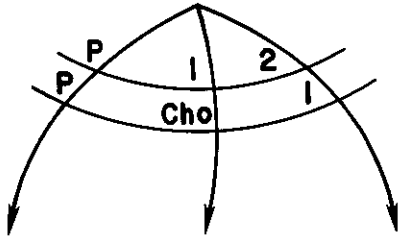
b.



qʼʷəl sceːɬtən
'bake' 'salmon'

(38) a. ni qʼʷəl-ət-əm kʷθə sceːɬtən ʔə-x̌' Mary
aux bake-tr-intr det salmon obl-det M.
'The salmon was baked by Mary.'

b.



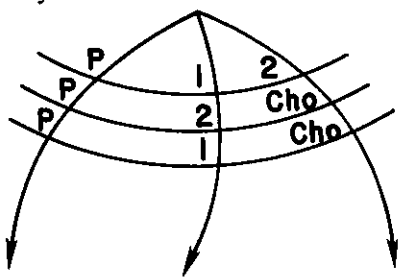
qʼʷəl Mary sceːɬtən
'bake' 'salmon'

The passive in (38) conforms to the relational grammar universal definition: there is a 2 in a transitive stratum that advances to 1 (Perlmutter and Postal 1983b).

The antipassive is represented in (39).

(39) a. ni q'ʷəl-əm ɬe Mary ʔə kʷθə sce:ɬtən
aux bake-intr det M. obl det salmon
'Mary baked the salmon.'

b.



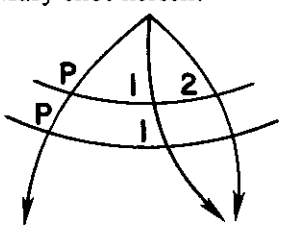
q'ʷəl Mary sce.ɬtən
'bake' 'salmon'

The RG view of antipassive involves the retreat of the 1 to 2 and then its readvancement (Postal 1977). The initial 2 is placed en chômage by the retreat of the 1, so the clause is finally intransitive.

(40) shows a multiattached reflexive.

(40) a. ni k'ʷələš-θət ɬə Mary
aux shoot-ref det M.
'Mary shot herself.'

b.



k'ʷələš Mary
'shoot'

Mary heads both a 1- and a 2-arc in the initial stratum. The 2-arc is then cancelled, so the clause is finally intransitive (Rosen 1988; Gerdts 1989b).

3.1. *Motivated chômage*

So far, the RG grammar is very similar to the mapping grammar. One aspect in which they differ is the imposition of the *motivated chômage*

law (Perlmutter and Postal 1983a) in classic RG, which I give informally in (41):

(41) A nominal is placed en chômage only when a distinct nominal assumes its relation.

The RG view of passive as in (38b) requires 2-to-1 advancement in order to effect the chômage of the initial 1. However, in Halkomelem the alleged final 1 appears in objective form (see [30]). This makes the agreement rule somewhat awkward under an RG treatment, as discussed in Gerdts (1989a, 1991a). Also, a retreat analysis of antipassive as in (39b) is unsupported in Halkomelem. In particular, there is no evidence for the intermediate 2-hood of *Mary*. The motivated chômage law requires this 2-hood nonetheless. The mapping account of passive (see [31]) and antipassive (see [21]) avoids this complication, since it allows the nonlinking of a grammatical relation and the cancellation of its corresponding MAP under the relevant morphological conditions.

Beyond this difference, moreover, the RG grammar misses some generalizations that fall out in the mapping analysis and thus proves to be the less adequate treatment. The following sections discuss the phenomena of transitive marking, applicative interactions, and psych constructions.

3.2. *Transitive marking*

Transitive marking, which appears as a suffix *-t* or its allomorphs *-θ* and *-s*, can be seen in the Halkomelem data above. Take, for example, the transitive clause in (35). The transitive suffix *-t* (glossed *tr*) appears immediately after the verb root. Transitive marking appears not only on the monotransitive in (35), but also on the applicative in (36), the passive in (38) (the transitive marker here is layered inside the intransitive suffix), and the reflexive in (40) (where it is layered inside, and coalesced with, the reflexive form). Predicates in unergatives (34), unaccusatives (37), and antipassives (39) do not have transitive suffixes.

Given this range of data, how do we state a rule for transitive marking? It is clear that a rule based solely on initial transitivity or on final transitivity will not be adequate. In (42), I give a summary of the levels of transitivity for the various clause types.

(42)

	initially transitive	finally transitive
without -t		
unergatives	no	no
unaccusatives	no	no

antipassives *with -t*	yes	no
monotransitive	yes	yes
applicatives (e.g. [8] and [9])	yes	yes
applicatives (e.g. [11])	no	yes
passives	yes	no
reflexives	yes	no

Clearly, neither initial transitivity nor final transitivity will distinguish clauses with transitive marking from those without it.

Basically, what we need to say is that the constructions with transitive marking are transitive IN SOME STRATUM and differ from the antipassive (which is also transitive in some stratum) in some crucial way. The rule in (43) from Gerdts (1989b) captures this.

(43) Transitive marking is determined by a nominal that heads (i) an ACC arc and (ii) a final term arc.

(43) says that we will get transitive marking as long as there is some nominal that heads an ACC arc (that is, a 2-arc in a transitive stratum). This blocks transitive marking in unaccusatives, since no transitive stratum is present. Furthermore, the relevant nominal must head a final term arc (that is, final 1- or 2-arc). We can see how this rule works by reviewing the data above. Final 2s, as in (35) and (36), will determine transitive marking. In addition, the passive in (38) and the multiattached reflexive in (40) have nominals that are transitive 2s and are also final 1s, so they will have transitive marking. Antipassives, however, will not have transitive marking, since the 2 is not a final term. Thus (43) accommodates the Halkomelem data.

Mapping theory, however, allows a much simpler statement, as in (44).

(44) Transitive marking appears if a GR other than the first one is mapped.

The effect of (44) is seen by comparing the structures in (45) and (46): (45) shows the structures for constructions without transitive marking and (46) shows the ones with.

(45)

1	2	1	2
|	|	|	
A	A	A	〈b〉
unergative	*unaccusative*	*antipassive*	

(46)

1	2	1	(2)	3/OBL	1	2	1	2
|	|	|				|	|
A	B	A	B		⟨a⟩	B	A	⟨b⟩
transitive		*applicative*			*passive*		*reflexive*	

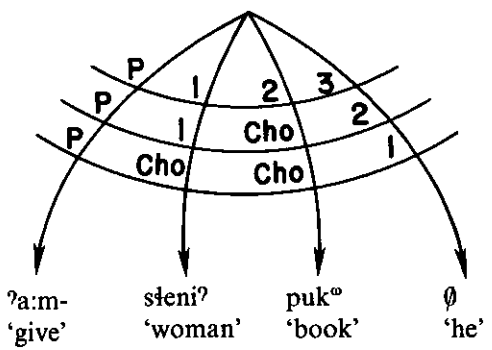
We see then that, under the mapping analysis, transitive marking in Halkomelem can be taken to be another type of marked association, one that is blind to which GR or MAP is involved as long as it is not the first GR.

3.3. *Types of "objects"*

A second problem for the classic RG treatment of Halkomelem arises when the patients of monotransitives are compared with the recipients or obliques of applicatives. Under the RG analysis these are both final 2s (see [35b] and [36b] respectively). Both constructions take transitive marking and both passivize (see [38] and [47]).

(47) a. ni? ʔa:m:əs-t-əm ʔə ɬə sɬéni? ʔə kʷθə puk^{ʷ}
aux give-adv-tr-intr obl det woman obl det book
'He was given the book by the woman.'

b.



However, these constructions do not always pattern alike. While monotransitives serve as a base for antipassives and reflexives, applicatives cannot, as summarized in (48).

(48)

	patients	*recipient/oblique*
transitive	yes	yes
passive	yes	yes
antipassive	yes	no
reflexive	yes	no

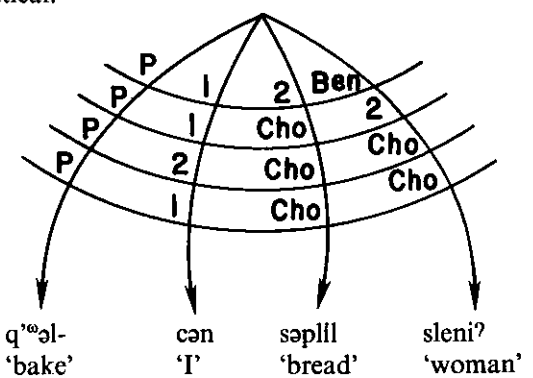
The data in (49) show that applicatives and antipassives are mutually exclusive, while (50) shows that reflexives based on applicatives are ungrammatical.

(49) *ni cən q'ʷəl-əɬc-əm ʔə ɬə sɬeni? ʔə kʷθə səplíl
aux 1sub bake-ben-intr obl det woman obl det bread
('I baked bread for the woman.')

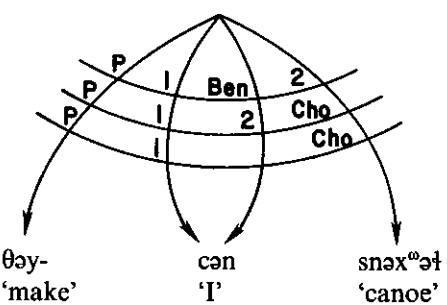
(50) *ni cən θəy-əɬc-θət ʔə kʷθə snəxʷəɬ
aux 1sub make-ben-tr+ref obl det canoe
('I made myself a canoe.')

Nothing in RG predicts this pattern. Comparing the structures for the applicative passive (47b), the applicative antipassive (51), and the applicative reflexive (52), we find that no principle of universal grammar blocks any of these, so the data are incorrectly predicted to be uniformly grammatical.

(51)



(52)



Gerdts (1988b) rules out (51) and (52) by the language-specific stipulation in (53).

(53) Only initial 2s can be antipassivized and reflexivized.

Mapping theory, however, predicts the correct array of data. First, in the case of applicatives and antipassives, we predict, given the no-delinking principle in (5), that a conflict will arise if the same MAP is required to be both linked and cancelled. Thus, (49) is out because, as (54) shows, the benefactive is linked to the lowest MAP B, which is also cancelled by the antipassive rule (as represented with angled brackets).[22,23]

(54) * 1 2 BEN
| /
A ⟨b⟩

Second, (50) is ruled out for a similar reason. The marked association rule for applicatives requires the mapping of the benefactive (to a MAP that is not cancelled). It is the benefactive, not the 2, that is coreferential with the 1, so we expect the structure in (55):

(55) * 1 2 BEN
└———/
A ⟨b⟩

However, the marked association for reflexives requires the cancellation of the B MAP and the multiattachment of the GR above the lowest MAP, which is the 2, not the benefactive. Thus, (55) is ruled out, and data like (50) are predicted to be ungrammatical.

Finally, passives of applicatives, for example (32) above, can be given the structure in (33) above. No conflict arises here, so the clause is correctly predicted to be grammatical. The conditions for three marked associations — applicative, transitive marking, and passive — are met: the benefactive is linked to the lowest MAP, a nominal other than the first one is mapped, and the A is cancelled.

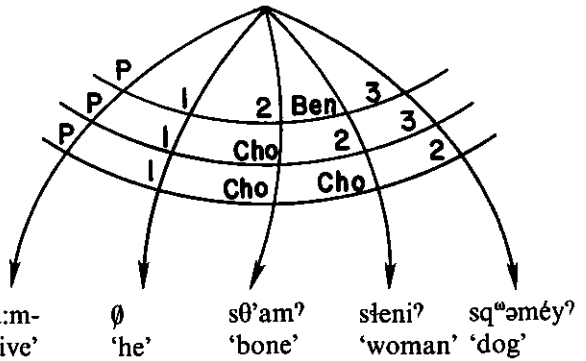
Furthermore, although Halkomelem has more than one type of applicative, it is notable that they are mutually exclusive. See for example (56) and (57).

(56) *ni ʔa:m-əs-ɬc-t-əs ɬə sɬeniʔ kʷθə sqʷəméyʔ ʔə kʷθə
aux give-adv-ben-tr-3erg det woman det dog obl det
sθ'amʔ
bone
'He gave the dog the bone for the woman.'

(57) *ʔi yə-ʔéʔwəʔ-ɬc-nəs-əs ɬə sɬeniʔ ɬə Mary
aux ser-come-ben-dir + tr-3erg det woman det M.
'He's coming toward the woman for Mary.'

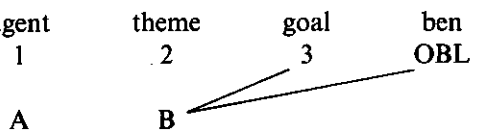
Again, the classic RG account makes no independent prediction concerning the grammaticality of such clauses.[24] The stratal diagram in (58) disobeys no principle of RG.

(58)



From a mapping theory viewpoint, however, clauses like (56) and (57) are predicted to be ungrammatical. As seen in the structure for (56) in (59), each applicative morpheme requires its corresponding nominal to be linked to the lowest MAP, thus creating a structure that violates the biuniqueness principle (see [5]).

(59) *



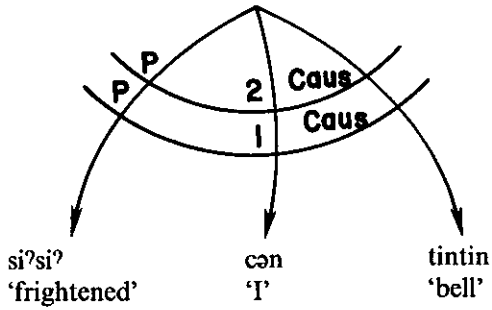
Mapping theory thus correctly predicts that passive but not antipassive or reflexive may combine with applicatives, and furthermore that multiple applicatives are impossible. The classic RG account must stipulate these facts for the grammar of Halkomelem.

3.4. *Halkomelem and the 1-AEX*

Let's turn to another problem for RG — passives of psychological predicates, as discussed in Gerdts (1984, 1988b). Halkomelem has psychological predicates like those in (60a).

(60) a. ni cən siʔsiʔ ʔə kʷθə tintin
aux 1sub frightened obl det bell
'I was frightened at the bell/telephone.'

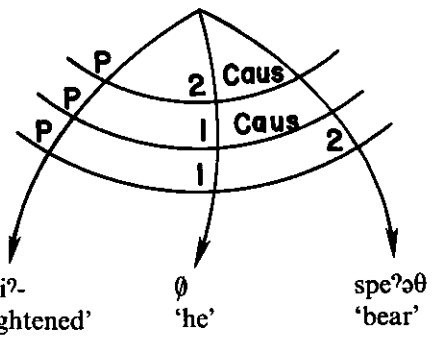
b.



These are unaccusative predicates: the experiencer is the initial 2, and the causal or stimulus of the psychological event is an oblique nominal. The RG analysis for (60a) is given in (60b). The experiencer advances to 1 and the final stratum is intransitive. An applicative (marked by the suffix *-me?*) is also possible, as in (61a).

(61) a. ni si?si?-mé?-t-əs kʷθə spe?əθ
aux frightened-cau-tr-3erg det bear
'He was frightened of the bear.'

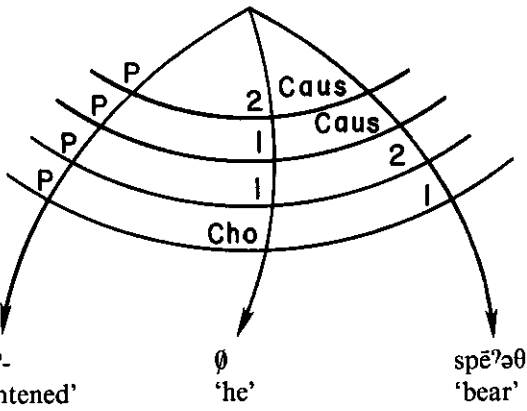
b.



In an RG account (61b), unaccusative advancement of the experiencer in an earlier stratum is followed by causal-to-2 advancement in a later one; the final stratum is transitive, so transitive marking applies in (61a). This transitive form can serve as a base for a passive, as (62a) shows.

(62) a. ni si?si?-mé?-t-əm kʷθə spe?əθ
aux frightened-cau-tr-intr det bear
literally: 'The bear was been frightened of by him.'

b.



The causal is the only final term; the verb takes the intransitive suffix (layered after transitive marking). The RG representation of this sentence is given in (62b). Notably, the structure in (62b) is problematic for classic RG, since it violates a putative universal — the *1-advancement exclusiveness law* (Perlmutter and Postal 1984), given informally in (63).

(63) The set of advancements to 1 in a single clause contains at most one member.

The 1-AEX is designed to rule out combinations of two passives or of a passive and an unaccusative. But this is exactly what is involved in (62b) — it has both unaccusative advancement and passive. Thus the data in (62a) are incorrectly predicted to be ungrammatical.[25]

Mapping theory provides a straightforward treatment of the data in (60a), (61a), and (62a), respectively, as represented in (64).

(64)

exp	caus	exp	caus	exp	caus
2	OBL	2	OBL	2	OBL
|		|	|		|
A		A	*B*	⟨a⟩	*B*
unaccusative		*applicative*		*applicative + passive*	

The unaccusative in (60a) has one linked MAP. The applicative in (61a) involves the addition of a second MAP, to which the causal links. The applicative passive in (62a) involves bringing in a MAP B and cancelling MAP A. The verb in (62a) has the applicative suffix, which requires the oblique to be mapped, transitive marking (since a nominal other than the first one is linked), and the intransitive suffix forming the passive, which requires that the first nominal (that is, the 2) not be linked and

(c) nonetheless generalizations in terms of GRs regardless of the linked θ-role are necessary.

Second, the GR hierarchy is crucial to my mapping analysis. An equally effective cross-linguistically valid θ-hierarchy, of course, could satisfy mapping grammar needs. However, the exact form of the θ-hierarchy is open to debate. See, for example, the different hierarchies used by Bresnan and Moshi (1990), Kiparsky (1987), and Jackendoff (1972, 1987). Furthermore, most discussions of θ-roles fail to consider more esoteric ones such as experiencer, causal, and causee and thus are limited in their usefulness.

Finally, I have dealt here with monoclausal phenomena only. Probably the strong point of RG is its treatment of multipredicate clause phenomena like causatives, adversity passives, desideratives, etc. (see Gibson and Raposo 1986; Davies and Rosen 1988; Gerdts 1988c; and references therein). Until a mapping grammar account of revaluation is given, it is premature to claim that a totally monostratal grammar is possible.

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Notes

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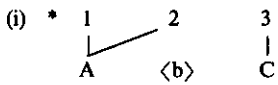
1. This paper uses the following relational grammar abbreviations: 1 = subject, 2 = direct object, 3 = indirect object, Ben = benefactive, Caus = causal, Cho = chômeur, Obl = oblique, and P = predicate.
2. See, for example, the comments in Baker (1988: 246, 258) on the RG treatment of applicatives.
3. The concept *absolutive* is also important, since Halkomelem shows many ergative properties (Gerdts 1988b).
4. Even worse, in Halkomelem, as in many other languages, unadvanced 3s and BENs are never seen. Languages of this type present a special challenge to RG and the claim that all languages have initial 3s and BENs (see Dryer 1986 and references therein).
5. Although I do not discuss possessors and causatives here, this paper gives both a mapping treatment (section 2) and an RG analysis (section 3) of the other attested Halkomelem constructions.
6. I am extrapolating from Harris's treatment of Georgian since her grammar provides arguments for constructions that do exist but no thorough discussion of those that do not.

7. Table 1 is based on data from the following sources. Albanian: Hubbard (1985). Arabic: Salih (1985). Basque: Mejías-Bikandi (1990), Saltarelli (1988). Blackfoot: Frantz (1978, 1981). Chamorro: Crain (1979), Gibson (1992). Choctaw: Davies (1986). Georgian: Harris (1981). Ilokano: Gerdts (1987). Indonesian: Chung (1983), Kana (1986). Japanese: Dubinsky (1985, 1990). Kalkatungu: Blake (1982). Kinyarwanda: Bickford (1986), Gerdts and Whaley (1991a, 1991b), Kimenyi (1980). Nubian: Abdel-Hafiz (1988). Polish: Dziwirek (1991, personal communication). Sierra Popoluca: Marlett (1986). Southern Tiwa: Allen and Frantz (1983), Rosen (1990). Turkish: Özkaragöz (1986). Tzotzil: Aissen (1983, 1987). Warlpiri: Nash (1986).
8. This paper gives only a brief look at mapping theory and does not compare it with other similar theories. The approach taken by Woolford (1986) is perhaps the closest in its notation and intention. Woolford, however, uses tree structure representations in her analysis. A unique feature of mapping theory is that it makes reference to hierarchically organized grammatical relations.
9. See Gerdts (1988b) for details of the presentational structure of Halkomelem. The presentational level will also involve cooccurrence restrictions referring to the semantic and grammatical properties of the mapped elements. For example, Halkomelem has the following constraint: *A = 3rd person, B = 2nd person (see Gerdts 1988a).
10. These principles for linking GRs to MAPs are fairly typical in linking theories. See, for example, Ostler (1980), Woolford (1986), and Yip et al. (1987).
11. Other languages, though, may use crossing lines in their grammars. For example, linking the 1 to the B MAP and the 2 to the A MAP may be the appropriate analysis of inverse person-marking effects, for example those in Ojibwa discussed by Perlmutter and Rhodes (1989).
12. See Gerdts (1989b) and references therein for a discussion of this parameter.
13. Languages will be parameterized as to how many and which MAPs are cancelled and how the GRs link. As stated, the rule is blind to the actual value of the first GR. Thus, passives on unaccusatives (see section 3.3) are possible, at least in some languages.
14. The Halkomelem data are from the late Arnold Guerin, a speaker of the Island dialect. My fieldwork on Halkomelem was supported by the Canadian Consulate, the Jacobs Research Fund, the Phillips Fund, and the National Museum of Man.

    The data are presented in standard Northwest orthography. I do not mark stress when it falls on the first syllable of a word. Abbreviations for glossing the Halkomelem data are as follows: adv(ancement), aux(iliary), ben(efactive), cau(sal), det(erminer), dir(ectional), erg(ative), intr(ansitive), obj(ect), obl(ique), ref(lexive), ser(ial), sub(ject), and tr(ansitive marking). See Gerdts (1988b) for a discussion of Halkomelem morphology.
15. Halkomelem has a single all-purpose preposition *ʔə*, which appears on themes in applicatives, (8)–(9), themes in antipassives, (17b), passive agents, (30b), and "unadvanced" obliques, (49).
16. Unlike datives and benefactives, directionals (especially if they are inanimate) can also appear as oblique phrases. See Gerdts (1988b) for discussion. Causals in psych constructions (see section 3.3) can also appear as oblique phrases.
17. Retreat phenomena, since they are irrelevant for Halkomelem (see [1]), are not discussed here.
18. This rule is essentially borrowed from classic relational grammar (Rosen 1988; Gerdts 1989b).
19. Thus, mapping theory claims that a reflexive structure like the following is impossible:



More research is necessary on this topic, but some preliminary results suggest that (i) is ungrammatical in three-MAP languages. For example, the Spanish data in (ii) are unacceptable to many speakers.

(ii) *Me le entregué.
'I gave myself to him.'

20. Although the phonological forms of the agreement suffixes in the active and passive are not always transparently related, it is clear that they are always objective — and not subjective — in nature. See Gerdts (1988b, 1989a) for discussion.
21. This analysis claims that the single MAP in a Halkomelem passive is a B MAP. Thus, mapping theory has no requirement that an A MAP must be present in final structures. That is, it has no law equivalent to the final-1 law of RG (Perlmutter and Postal 1983a).

    The claim that a B rather than an A MAP is present in Halkomelem passives is based on two factors: first, the objective agreement, and, second, the lack of other tests in Halkomelem to distinguish A MAPs from B MAPs (Gerdts 1988b, 1988c, 1989a).
22. Mapping to the A MAP (i.e. the lowest noncancelled MAP) could be a possible analysis. However, in that case, we predict that the 1 would fail to link and would therefore be presented as a nonargument. Such an analysis might be correlated with passive morphology (6iv). Languages with applicatives and passives involving the cancellation of the B MAP would have this structure.
23. Philippine languages, under the ergative analysis of Gerdts (1987), would also exemplify a case where antipassives and applicatives are mutually exclusive.

    In some instances, antipassive morphology is used for the other constructions, such as cancellation of nonobjects under coreference in Halkomelem (Gerdts 1989b) or unspecified object constructions in Chamorro (Gibson 1992). I take these to involve rules other than antipassive. Gibson (1992) notes that specified goals or obliques cannot appear in Chamorro antipassive constructions. This would follow under mapping theory.
24. However, see Gerdts and Whaley (i.p.).
25. Farrell (1991) claims, alternatively, that such constructions are initially unergative. Since no unaccusative advancement is required, the 1-AEX is not violated. However, see Gerdts (1991b) for a discussion of unaccusativity in Halkomelem.
26. This analysis thus differs from the classic RG analysis in one crucial respect. The experiencer nominal is claimed to be a 1-chômeur in the classic RG account. Unaccusative advancement must be posited so that the subsequent advancement of the applicative results in a transitive stratum, which in turn serves as a base for the passive. Under the mapping analysis, the experiencer is claimed to be an unlinked 2. As note 13 discusses, unlinked 1s and unlinked 2s, and many other nonargument nominals, are presented by the same preposition. Thus the two analyses cannot be distinguished by appeal to surface morphology.
27. Unfortunately, data involving Lushootseed causals and passives are unavailable to me. If a passive of a causal is possible in Lushootseed, then it would be given the following analysis:

(i) 2 CAUSAL
A ⟨*b*⟩

- This is a possible analysis, since it satisfies the marked association of applicative by mapping the causal and that of passive by not mapping the first GR. However, it has

the awkward effect of adding a B that is also cancelled. The status of the structure in (i) needs to be examined on the basis of the passive of unaccusatives found in other languages.

28. To my knowledge, Frantz (1985) is the only other attempt at integrating morphology into relational grammar.

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