

Morphologically-Mediated Relational Profiles

Donna B. Gerdts

Simon Fraser University

1. The Landing Site Problem.¹

The Relational Grammar view of universal grammar currently consists of a set of hierarchically-organized grammatical relations ($1 > 2 > 3 > \text{OBL}$); a list of possible constructions (e.g., advancements ($\text{OBL} \rightarrow 3$, $\text{OBL} \rightarrow 2$, $3 \rightarrow 2$, etc.) retreats ($1 \rightarrow 2$, $1 \rightarrow 3$, $2 \rightarrow 3$), ascensions ($\text{POS} \rightarrow 2$, $\text{POS} \rightarrow 3$, etc.) and unions (downstairs $1 \rightarrow$ upstairs 2, downstairs $1 \rightarrow$ upstairs 3)), and some universal laws (Stratal Uniqueness Law, Oblique Law, etc.) that place constraints on the resulting structures. Research in Relational Grammar has yielded much new and interesting information about constructions in the world's languages. However, RG has made little attempt to "predict" the array of constructions found in one language versus another and thus has garnered complaints from practitioners of allegedly more explanatory theories, such as Government/Binding.²

Criticism of RG comes from two directions. First, no language yet discovered makes use of all of the possible revaluations (and combinations thereof) that need to be posited for Universal Grammar. For example, in Halkomelem (Gerdts 1988), advancements of the $3 \rightarrow 2$ and $\text{BEN} \rightarrow 2$ type are found, as (1a) and (1b) show, but $\text{OBL} \rightarrow 3$ advancement doesn't seem to exist, as (1c) shows.³

- (1) a. ni ʔa.m-əs-θámʔš-əs ʔə kʷθə pukʷ
 aux give-adv-tr+1obj-3erg obl det book
 "He gave me the book."
- b. ni qʷəl-əlc-θámʔš-əs ʔə kʷθə sce.ʔən
 aux bake-ben-tr+1obj-3erg obl det salmon
 "He baked me the salmon."
- c. ni qʷəl-ət-əs kʷθə sce.ʔən (*ʔə ʔə steniʔ)
 aux bake-tr-3erg det salmon obl det woman
 "He baked the salmon for the woman."

We have a totally different situation in Georgian. Here, Harris (1981) shows that Georgian has a rule of $\text{BEN} \rightarrow 3$ advancement (see (2b)).

- (2) a. *gelam* *šekera* *axali* *šarvali* *merabisatvis.*
 Gela-ERG he-sewed-it-II-I new trousers-NOM Merab-for
 "Gela made new trousers for Merab."
 b. *gelam* *šekera* *axali* *šarvali* *merabs*
 Gela-ERG he-sewed-him-it-II-I new trousers-NOM Merab-DAT
 "Gela made new trousers for Merab."

However, unlike Halkomelem, Georgian apparently lacks BEN → 2 or 3 → 2. Our impression of RG is that it has too many "landing sites" for rules as they apply in individual languages.

Paradoxically, in other ways it seems that RG does not have enough landing sites. In RG, only 1s, 2s, and 3s are term relations. Furthermore, the Stratal Uniqueness Law (Perlmutter and Postal 1983) limits the number of term relations to one each per stratum. In addition, the Oblique Law (Perlmutter and Postal 1983) bans revaluations to OBL. This view runs head-first into Kinyarwanda data like (3a), where Kimenyi (1980) has shown that 2s, 3s, and BENs can simultaneously act like terms; for example, he shows that each can passivize, relativize, and incorporate as pronouns (see (3b)):

- (3) a. *Umugóre* *a-ra-he-er-a* *umugabo* *imbwa* *ibiryo.*
 woman she-pres-give-appl-asp man dog food
 "The woman is giving food to the dog for the man."
 b. *Umugóre* *a-ra-bi-yi-mu-he-er-a.*
 woman she-pres-it-it-him-give-appl-asp
 "The woman is giving it to it for him."

Kimenyi also gives cases of Instrumental applicatives where the 2, 3, and INSTR can simultaneously act like terms.

- (4) *Umugabo* *y-eerek-eesh-eje* *ábáana* *amashusho* *ímashiñi.*
 man he-show-instr-asp children pictures machine
 "The man showed pictures to the children with the machine."

This has led Kimenyi to claim that multiple objects are possible in Kinyarwanda. However, if we abandon the Stratal Uniqueness Law as a universal construct, then we further complicate the landing site problem discussed above. The universally available list of constructions would not only include BEN → object advancement,

but also BEN → 2nd object, BEN → 3rd object, BEN → 4th object, etc. Our landing site problem would be worsened geometrically. In addition, we must explain why other languages—for example, Halkomelem, Ilokano, and Chamorro, lack multiple objects in parallel examples (see Gerds and Whaley, in prep.). Furthermore, we need an explanation for why—even in Kinyarwanda—an unlimited number of objects is not possible. For example, Kimenyi (p. 113) notes that examples involving both Benefactive objects and Instrumental objects do not seem to exist. Thus we reach a stand-off.

Southern Tiwa presents another challenge for landing sites. Allen and Frantz (1983) show that sentences involving the verb *wia* 'give' come in pairs like (5a) and (5b).

- (5) a. ti-khwien-wia-ban seuanide-'ay
 1SG:3iSG-give-PAST man-to
 "I gave the dog to the man."
 b. ta-khwien-wia-ban seuanide
 1SG:3iSG:3iSG-give-PAST man
 "I gave the man the dog."

What we would like to say is that the recipient in (5a) advances to a term relation in (5b). In (5b) we see triple agreement, so we would want to claim, as does Rosen (1990), that there is a final 1, 2, and 3 in (5b). But if *seuanide* 'man' is a final 3 in (5b), where did it advance from? After all, on semantic grounds, RG posits that recipients are initial 3s, so *seuanide* is already a 3 in (5a)! Thus, Southern Tiwa presents an interesting puzzle.

Taking what we have said so far about advancements in RG, we see, paradoxically, that there are both too many and too few places for advancing nominals to "land". I will refer to this as the Landing Site Paradox.

This problem is not unique to RG; Government/Binding theory has similar difficulties. The theory is constrained by the θ -criterion (Chomsky 1981), which excludes θ -assigned positions such as object and indirect object as landing sites. So, for example, *himin I believe [him to be a fool]* can not "raise" to become the object of the matrix verb *believe*. However, *him* can pick up object "effects" not by moving but rather by being exceptionally governed and therefore case marked by the higher verb. Baker (1988) gives a parallel treatment for a variety of object-effect constructions including applicatives, causatives, and noun incorporation. This approach, however is not easily extended to indirect objects. Thus, Baker does not

treat BEN → 3 advancement or other revaluations to 3 at all in his discussion. In various footnotes he questions the relevance of such phenomena for syntax. For example, he claims (1988: 489-90): "...RG has argued for rules changing benefactives to indirect (dative) objects. These could simply be instances where two different prepositions—the "benefactive" one and the "dative" one—happen to overlap in the range of theta roles they assign..."

But reviewing the relevant Georgian data, we find that more than case changes in BEN → 3 clauses. As Harris (1981) shows, advances determine agreement and thus pro-drop (see (6b)).

- (6) a. *gelam* *šekera* *axali* *šarvali* *šentvis*.
 Gela-ERG he-sewed-it-II-I new trousers-NOM you-for
 "Gela made new trousers for you."
- b. *gelam* *šegikera* *axali* *šarvali* (*šen*)
 Gela-ERG he-sewed-you-it-II-I new trousers-NOM you-DAT
 "Gela made new trousers for you."

Binding facts (Harris 1976) are affected as well, as (7a) and (7b) show.

- (7) a. *važam* *gadatargmna* *anzoristvis* *tavisi leksi*.
 Važa-ERG he-translated-it-II-I Anzor-for self-s poem
 "Važa_i translated for Anzor_j his_i/*_j poem."
- b. *važam* *gadautargmna* *anzoris* *tavisi leksi*.
 Važa-ERG he-translated-him-it-II-I Anzor-DAT self-s poem
 "Važa_i translated for Anzor_j his_i/_j poem."

There is even an extra morpheme—the "version vowel" (in bold face in (6b) and (7b))—that registers the BEN → 3 advancement. Thus, BEN → 3 "effects" parallel those in "object effect" applicatives and cannot be dismissed so easily. In short, GB has a landing site problem.

Recent versions of the theory, however, may provide a solution for this problem. Chomsky (1989) posits structures that include not only a *T*(ense) and an *agr*(eement) position corresponding to subject agreement, but one for object agreement as well. Since each *T/agr* comes with a θ -less SPEC position, we have many more landing sites than previously posited. Suppose we add additional *agrs* to accommodate indirect object (as required in Georgian) and fourth object (as required in Kinyarwanda), each with its own SPEC position. Now we have an

adequate number of landing sites—in fact, too many. Unless we have some principled means for limiting the number of *agrs* per language and per construction, we have more landing sites than most languages would ever make use of.

We have seen that constructions with object, indirect object, and fourth object “effects” provide a cross-theoretical problem. How do we have a constrained syntactic theory that is nevertheless flexible enough to fit the data?

2. Relational Profiles

One thing that is quickly apparent to the reader of any RG treatment of an individual language is that some relational concepts are much more central to the grammar of that language than others. Take Halkomelem, for example. Rules of the grammar pivot on the concept **object**,⁴ while the concept **indirect object** seems to be irrelevant. We can see this by comparing the attested and unattested constructions for Halkomelem given in (8).

(8) Halkomelem constructions:

attested

passives

unaccusatives

psych unaccusatives

antipassive

reflexives with 1-2 multiattachment

3 → 2 advancement

BEN → 2 advancement

other oblique advancements to 2

(directional, causal)

POS revalued to 2

causee to 2 revaluation

unattested

inversion (1 → 3 retreat)

definitive cases of 2 → 3 retreat

reflexives with 1-3 multiattachment

initial 3 as final 3

BEN → 3 advancement

advancements to 3

POS revalued to 3

causee to 3 revaluation

The information in (8) allows us to formulate a relational profile for Halkomelem: it is an object-centered language. An examination of attested vs. unattested constructions in Georgian yields a very different picture. As (9) shows, it has an indirect object-centered relational profile that is almost the mirror image of the facts for Halkomelem:

(9) Georgian constructions:

<u>attested</u>	<u>unattested</u>
passives	
unaccusatives	
inversion (1 → 3 retreat)	
2 → 3 retreat	antipassive
initial 3 as final 3	3 → 2 advancement
BEN → 3 advancement	BEN → 2 advancement
other Advancements to 3 (superessive)	advancements to 2
POS ascension to 3	POS ascension to 2
causee to 2 revaluation (intransitives)	
causee to 3 revaluation (transitives)	causee to 2 revaluation (transitives)

In fact, this distinction—object-centered vs. indirect object-centered—holds for a large number of languages. The Appendix presents a compilation of information concerning the relational profiles of twenty languages for which relationally compatible grammars are available. We see that, with the exception of Kinyarwanda, these languages can be straightforwardly classified as 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 (pronoun incorporation, cliticization), license S(tructural)-Case (as opposed to I-case (initial-level, aka inherent, thematic, semantic case)), or appear in a fixed word order (e.g., adjacent to the predicate). Reviewing the chart in the Appendix, 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/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 anteced reflexives and raise; in the type B language Albanian (Hubbard 1985), 1s, 2s, and 3s float quantifiers; in the type C language Kinyarwada (Kimenyi 1980) 1s, 2s, 3s, and BENs relativize.

3. The Landing Site Principle

Examining the data in the Appendix, we see a perfect correlation between the maximum number of MAPs allowed in a language and the grammatical relation that serves as the pivotal position in the relational profile. On the basis of these data, I propose the following generalization:

(10) Landing site principle:

Part A. Only morphosyntactically-licensed argument positions can be revaluation landing sites.

Principle (10) has an interesting effect: since the number of MAPs varies across languages, the number of landing sites will vary as well. It predicts that 2-MAP languages can allow $OBL \rightarrow 2$ and $3 \rightarrow 2$ but not $OBL \rightarrow 3$ or $OBL \rightarrow OBL$, 3-MAP languages can allow $OBL \rightarrow 3$ but not $OBL \rightarrow OBL$, while 4-MAP languages may allow what appears to be $OBL \rightarrow OBL$ advancement (as in Kinyarwanda). Thus (10) accommodates much of the data discussed above. The problem remains, however, of how to constrain 3-MAP languages from allowing $OBL \rightarrow 2$ or $3 \rightarrow 2$. A second part to the landing site principle can ensure this.

(11) Landing site principle:

Part B. The last MAP is the preferred landing site.

The Landing Site Principle will give us the flexibility we need but still allow us to maintain a highly constrained view of advancements.

4. MAPing Theory

But how can this generalization be formally implemented? To do this we must provide our theory with a level of representation that encodes information concerning the MAPs of the language. I briefly outline a theory, referred to here as MAPing theory, that will accomplish this. Originally conceived as a morphological component to augment Relational Grammar, MAPing theory, in fact, provides an alternative means for stating generalizations that would refer to the concept of final level in classic RG⁵. MAPing theory consists of several modules and rules for relating one module to another. Three perspectives on a nominal are encoded: its thematic relation, its grammatical relation (corresponding to its initial grammatical relation in classic RG), and its MAP (corresponding to its final relation in classic

RG), if it is a direct argument.⁶ For example, (12) represents a clause in which there are three nominals, each bearing a term relation in initial structure and also three MAPs (e.g. the Southern Tiwa data in (5b)):

(12) thematic relations:	agent	theme	goal	
grammatical relations:	1	2	3	(initial relations in classic RG)
MAPs:	A	B	C	(final relations in classic RG)

MAPs are ordered positions (represented here as A, B, C, etc.) linked to morphological statements (for example: subject agreement licenses A, the position immediately adjacent to and following the verb licenses B, DAT case licenses C). 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).

The principles for linking GRs to MAPs are given in (13).⁷

(13) Principles for Linking GRs and MAPs:

SATURATION PRINCIPLE: every MAP must be linked to a GR or cancelled.

BIUNIQUENESS PRINCIPLE: every MAP is linked to a single GR (except for multiattachment under coreference), and every GR is linked to at most one MAP.

NO DELINKING PRINCIPLE: there are no "delinkings".

Unmarked associations proceed in a vertical, non-crossing, left-to-right fashion. For example, (12) above shows unmarked association in a three MAP case. Marked associations, however, may involve non-vertical linkings or the linking of an "extra" nominal not lexically subcategorized by the verb subject to specifications in a grammar. These are generally accompanied by morphological conditions. Getting these specifications right is the biggest task of a MAPing grammar. Some examples of marked association rules are given in (14):

- (14) i. benefactive applicative morphology = add a MAP (up to threshold) and link the benefactive
 ii. passive morphology = do not link the 1, cancel one or more MAPs
 iii. inverse morphology = link the 1, but not to MAP A.

Furthermore, I claim that marked associations will be constrained by the universal principle in (15), which requires linking to the lowest MAP in the case of non-vertical linking; this will give us the instantiation of the pretheoretical (10) and (11)—the landing site principle.⁸

(15) MARKED ASSOCIATION PRINCIPLE:
 Link to the lowest MAP.

The effect of (15) can be seen in the following structures. (16a) shows unmarked association in a 2-MAP case. The 1 links to A and the 2 to B. The 3 is unlinked and therefore gets licensed as a non-argument by a peripheral means, such as an adposition. (16b) shows a Dative applicative: the 3 links to B, and the 2 is a non-argument.

- (16) a. 2 = B (unmarked association), (e.g. S. Tiwa (5a))

θ-Rs:	agent	theme	goal
GRs:	1	2	3
MAPs:	A	B	

- b. 3 = B (marked association), (e.g. Halkomelem (1a))

θ-Rs:	agent	theme	goal
GRs:	1	2	3
MAPs:	A	B	

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In a 3-MAP language like Georgian, the oblique (introduced by marked association) can link to C, as in (17a), but not to B, as in (17b). (17b) violates (15) because the oblique does not link to the last MAP.

(17) a. OBL = C (e.g. Georgian (2b))

θ-Rs:	agent	theme	ben
GRs:	1	2	OBL
MAPs:	A	B	C

b. *OBL=B (*Marked Association Principle)

θ-Rs:	agent	theme	ben
GRs:	1	2	OBL
MAPs:	A	B	C

In Kinyarwanda, a 4-MAP language, a BEN can link to D, as in (18a), or an INSTR can, as in (18b). But the BEN and INSTR cannot both link to D (18c) due to the Biuniqueness Principle in (13), so such sentences are ruled out.

(18) a. BEN=D (Kinyarwanda (3a))

θ-Rs:	agent	theme	goal	ben
GRs:	1	2	3	OBL
MAPs:	A	B	C	D

b. INSTR=D (Kinyarwanda (4))

θ-Rs:	agent	theme	goal	instr
GRs:	1	2	3	OBL
MAPs:	A	B	C	D

c. *Benefactive and Instrumental Applicatives in Kinyarwanda

θ-Rs:	agent	theme	goal	ben	instr
GRs:	1	2	3	OBL	OBL
MAPs:	A	B	C	D	

We see then that MAPing theory easily accounts for the range of advancements attested and unattested in the languages in my sample.

A full discussion of MAPing theory would necessarily contrast the constructions it allows versus those allowed in classic RG.⁹ This is outside the scope of the present paper. However, I will emphasize one difference. The Marked Association Principle is stronger than the Oblique Law in some respects but weaker in others. Unlike the Oblique Law, the Marked Association Principle allows BEN and INSTR to link to a 4th position (as in Kinyarwanda), and it also allows unlinked 3s (as in Southern Tiwa). However, the Marked Association Principle prohibits BEN → 2 and 3 → 2 in Georgian and BEN → 3 in Halkomelem. The oblique law would be irrelevant to these constructions, since they do not involve an oblique landing site. These differences are summarized in the chart in (19).

(19) Summary:	Marked Assoc. Principle	Oblique Law
OBL → OBL	yes, if 4 MAP clause	no
3 → OBL	yes, if 3 MAP clause	no
OBL → 3	yes, if 3 MAP clause	yes
OBL → 2	yes, if 2 MAP clause	yes
3 → 2	yes, if 2 MAP clause	yes

I conclude that MAPing theory together with the Marked Association Principle does a better job than classic RG at “predicting” what advancement “effect” phenomena will be allowed in any given language.

5. Conclusion

This paper has shown that a purely syntactically based view of advancements in universal grammar is necessarily doomed to failure. Languages differ systematically in the type of advancements (and, for that matter, revaluations in general) that they allow.¹⁰ A syntactic approach to the problem fails to predict this systematic variation. We see, however, that the pivotal position in a language’s relational profile is correlated with the maximum number of morphosyntactically-licensed argument positions allowed in the language. This can be stated as a generalization—the Landing Site Principle—that predicts the types of advancements that a given language may have.

In addition, I have presented the rudiments of a MAPing theory for linking grammatical relations to morphosyntactically-licensed argument positions. This theory provides the concepts that allow the formal instantiation of the Landing Site Principle.

Footnotes

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²For example, for comments on the phenomena discussed here, see Baker (1988, p. 246, 258).

³Even 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 Blanshitt 1984, Dryer 1986, Faltz 1978, Givon 1984.)

⁴The concept absolutive is also important, since the language shows many ergative properties.

⁵This is especially true for phenomena like relativization, quantifier float, raising, etc., as discussed above. This radically monostratal version of MAPing theory may subsequently have to be softened to accommodate multipredicate clause phenomena such as causatives.

⁶This paper can only give a brief look at MAPing theory and furthermore does not compare it with other similar theories. Woolford (1986) is perhaps the closest theory in its notation and intention.

⁷These principles for linking GRs to MAPs are fairly typical in linking theories; see, for example, Ostler (1980), Woolford (1986), and Yip et al. (1987).

⁸I exclude passive from discussion here. The MAPing theory approach to this phenomenon is to require that the 1 does not link. This will automatically set up a situation that forces either dummy insertion or the marked association of some other nominal to the A position. The associations required to "fix" passive are not subject to (15).

⁹Suffice it to say that many of the classic laws and also some of the recent "improvements" to RG (see especially Farrell 1991 and Perlmutter 1989) will be automatically accommodated in MAPing theory.

¹⁰The presented version of the paper also discussed retreats. However, due to space limitations, these are not dealt with here.

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Appendix.

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

Ag = agreement. Agreement; clitics. Agreement: incorporated pronouns. N = nominative. A = accusative. D = Dative. E = ergative.

Ab = absolutive. 1D = 1 demotion. 2D = 2 demotion. 3A = 3 Advancement. BenA = benefactive advancement. Ob/A = oblique advancement.

Com = comitative. Sti = stimulus. Dir = directional. Ins = instrument. Loc = Locative. Pur = purpose. Abl = ablative. Sup = superessive.

Adv = adverbial. Pos = possessor ascension. Intr = intransitive.