

## RELATIONAL VISIBILITY

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### 1. Case Theory

Within Government/Binding, Case Theory, which includes the Case Filter in (1a) and the set of Case assignment rules in (1b), has been put to effective use to account for possible word order and case arrays.

- (1) a. \*  $\left[ \begin{array}{c} \text{NP} \\ \text{lexical} \\ \text{-case} \end{array} \right]$
- b. NOM is assigned by agr  
ACC is assigned by V

For example, in Mandarin as pointed out by Huang (1982) and discussed further by Li (1985) among others, where abstract case is claimed to be assigned by the V in a rightward fashion, shu in (2) but not (3) can get Case; shu in (3), in order to pass the Case Filter (1a), is assigned case via the insertion of ba.

- (2) Ta mai le shu le.  
he buy asp book asp  
'He has bought a book.'
- (3) Ta ba shu mai le.  
he ACC book buy asp  
'He has bought the book.'

Other theories, including Relational Grammar, have been noticeably silent on such issues. This paper, by positing a relationally based alternative to Case Theory, seeks to rectify this situation. Furthermore, I claim that Case Theory provides an extremely bad fit between the abstract syntax and the overt morphology of languages of the world, a problem that the relational approach given here avoids.

### 2. Relational Visibility

A quick contrast of the two theories shows that much of the work of Case Theory is already covered in Relational Grammar. For example, Case Theory disallows structures where there are more NPs than Cases to assign. The Stratal Uniqueness Law (Perlmutter and Postal 1983) deals with the most serious of such instances. Furthermore, Case Theory drives Move-NP; the Final 1-Law (in conjunction with the Motivated Dummy Law), trivially brings about the same effect in RG. The residue of Case Theory, for example, explanations for patterns like the Mandarin one in (2) and (3), is easily

accommodated in RG by means of the following principle:

- (4) RELATIONAL VISIBILITY:  
Every nominal must be relationally identified by some morphosyntactic means.

By relationally identified, I mean be distinguishable from other relevant grammatical relations. Morphosyntactic means include agreement, case, and word order.<sup>1</sup> Relational Visibility provides a straightforward account of the Mandarin data. The object in (2) forms a constituent with the V and is thus identified as the object; in (3), however, where constituency can not identify the nominal, another means--case--takes over.

The interaction of case and word order in Korean shows a second example of this type. Case marked NPs can appear in any preverbal order, as (5a) and (5b) show:

(5) Korean

- a. Chelsu-ka haksæng-t+l-+l manna-t-ta.  
C. -NOM student-pl-ACC meet-pst-ind  
'Chulsoo met the students.'
- b. Haksæng-t+l-+l Chelsu-ka manna-t-ta.  
student-pl-ACC C. -NOM meet-pst-ind

Objects in Korean often appear without Accusative case (see (6a)) but they are not case-marked, they cannot appear before the subject (see (6b)).

- (6) a. Chelsu-ka haksæng-t+l manna-t-ta.  
C. -NOM student-pl meet-pst-ind  
'Chulsoo met the students.'
- b. \*Haksæng-t+l Chelsu-ka manna-t-ta.  
student-pl C. -NOM meet-pst-ind

Since neither surface case nor word order (assuming objects are identified only in preverbal position in Korean) identifies the object in (6b), Relational Visibility correctly predicts its ungrammaticality. In contrast, a Case Theory account of the above data is unenlightening. Paradoxically, in (6a), where the structural condition of ACC case is met, case need not appear; but case must appear in (6b) where the structural condition is not met (at least not in an obvious fashion).

One criticism which could be leveled against an approach making use of a vague construct such as Relational Visibility is that it allows for a wide range of morphosyntactic systems, many of which do not occur in languages of the world or occur only rarely. While Case Theory, if taken as a serious morphosyntactic

proposal, expects an overly restrictive class of languages, Relational Visibility, since any combination of devices like agreement, case, and word order could serve to identify a nominal, seems by comparison uninterestingly unconstrained.

Before taking this discussion further, I propose to make some attempt at giving more than an impressionistic view of what languages are like with respect to the amount and type of morphosyntax used to identify grammatical relations. Thus, the bulk of this paper is a report on an informal survey of languages with respect to their morphosyntactic systems. Based on the distribution of agreement, case, and word order facts found in this sample, I propose two additional principles--Relational Economy and Relational Priority. Taken in conjunction with Relational Visibility, these principles provide a typology of morphosyntactic systems which I claim to more accurately represent the class of natural languages than does Case Theory.

### 3. The Survey

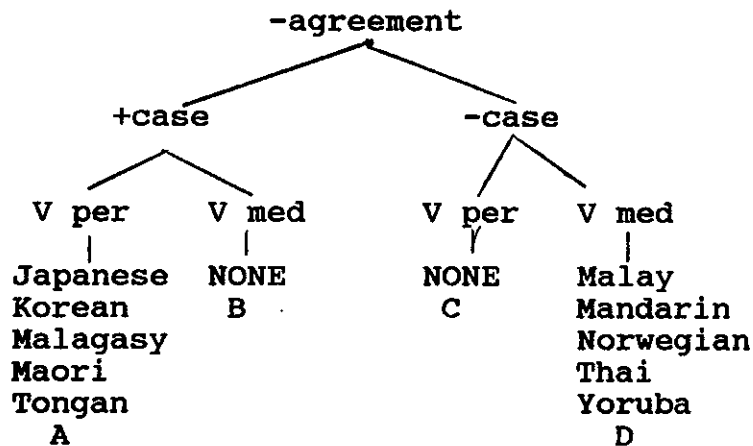
The results of a survey of the case, agreement, and word order of 37 languages conducted by Lindsay Whaley (of SUNY at Buffalo) and myself are given in the Appendix. The grammars we consulted are listed in the references. The languages we examined were basically those in Greenberg (1966)'s sample.<sup>2</sup> However, we eliminated a couple of languages we could not find information on and<sub>3</sub> added some languages whose grammars we had on hand. Although the resulting 37 language sample could hardly be considered a statistically sophisticated one, we felt that it is broad-based enough to give some preliminary idea as to the sorts of morphosyntactic systems which exist in the languages of the world.

Because of the difficulty of getting information about a rich assortment of grammatical relations from the available grammars, we limited our search to information about subject, object, and, in cases where they were directly discussed, indirect objects. To allow for categorial differences among languages, we took a very broad definition of our constructs. By agreement we mean any cross-referencing device appearing in the predicate complex including agreement, incorporated pronouns, and clitics. Case appears as either nominal morphology or adpositional elements. Although we felt that it might not be word order per se but rather constituency-- for example if the verb and object form a constituent--which served to identify relations, we were unable to glean precise information concerning constituent structure from most grammars. We felt, however, that it was reasonable to consider verb medial order as a means of identifying relations. Furthermore, many languages have notoriously

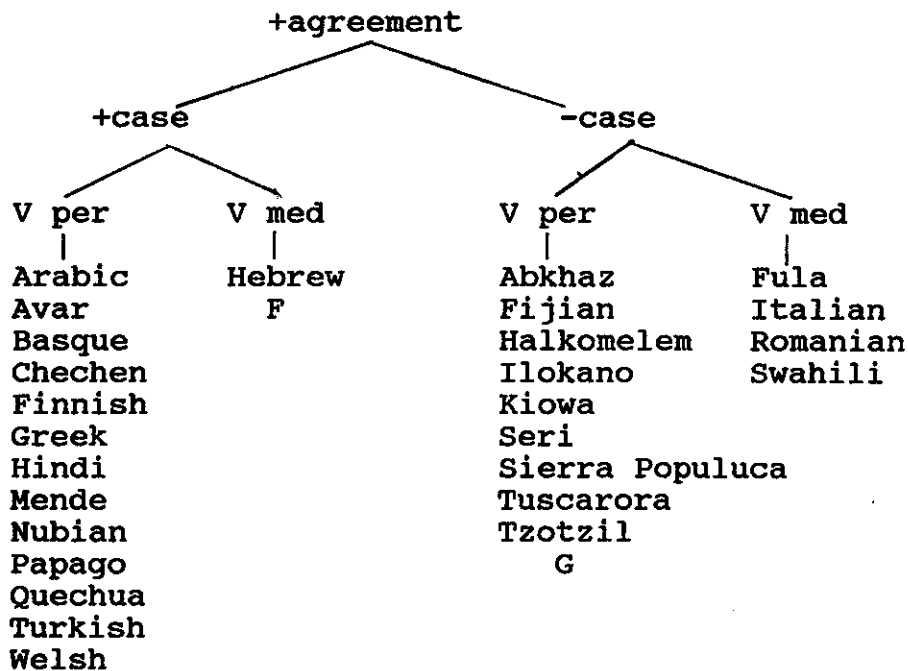
uncharacterizable word orders.<sup>4</sup> In this situation, we classified these languages as verb peripheral, since we felt that it was not safe to assume that word order serves to identify grammatical relations in such languages.

In (7) and (8), we have organized the languages of our survey according to whether or not they have agreement, case, or verb medial order.

(7)



(8)



Viewing the data this way, we immediately noticed one gap: we found no C languages, that is, languages which do not have agreement nor case nor verb medial order. The lack of C languages is expected given the principle of Relational Visibility in (4).

Romanian, Swahili, and Fula. Furthermore, we found two languages--Basque and Papago--with relatively free word order, a rich agreement system, and some case. Finally, although Hebrew exhibits an SVO word order, it nevertheless has subject agreement and case marking on definite objects.<sup>6</sup> However, our suspicion is that further research on these languages will reveal that there is far less redundancy in the identification of grammatical relations than our cursory study suggests. For example, Italian frequently exhibits VS word order; Basque case, according to Mejias-Bikandi (1990), cannot be characterized in terms of final grammatical relations; and Papago case, it makes only a subject/non-subject distinction. Our impression is that one or the other of morphosyntactic devices in these languages is not robust enough to serve to identify relations.

##### 5. Relational Priority

A third pattern emerged upon a closer examination of patterns of word order, case, and agreement. The verb initial languages in our sample tended to have agreement. This was true of Arabic, Fijian, Halkomelem, Ilokano, Tzotzil, and Welsh. And we note that two of the three exceptions to this generalization, Malagasy and Tongan, though they did not have agreement, did case mark the first post-verbal nominal.<sup>7</sup> Maori, at least under a nominative/accusative analysis, differs from the other VSO languages in our sample in that the object is marked Accusative while the subject is unmarked.<sup>8</sup>

In contrast, most verb final languages in our sample had at least some case. Avar, Basque, Chechen, Finnish, Greek, Hindi, Japanese, Korean, Mende, Nubian, Papago, Quechua, and Turkish show this pattern. Again there were three exceptions--Abkhaz, Kiowa, and Seri. These verb final languages make use of an elaborated agreement system rather than case to identify relations.

Overall we felt the data compelling enough to posit the principle in (12).

(12) **RELATIONAL PRIORITY:**

Nominals tend to be identified by the first means available.

We found some precedent for this principle in the typological literature. In his seminal study on language typology, Greenberg (1966) posited 45 language universals. One of them, (#41) given here as (13), deals with morphosyntax drawing a correlation between verb final word order and case marking.

(13) If in a language the verb follows both the nominal subject and the nominal object as the dominant order, the language almost always has a case

#### 4. Relational Economy

Upon further inspection of the data, we discovered a second trend. Half of the languages in our sample used only one morphosyntactic means for identifying subjects and objects. For example, the languages in A use case, the languages in D use word order, and the languages in G use agreement. This led us to suspect a principle along the lines of (9).

(9) RELATIONAL ECONOMY:

Nominals tend not to be multiply identified.

The lack of languages in B is also expected under Relational Economy.<sup>5</sup>

However, many languages in the sample appear to violate (9), for example, the languages in E which have both agreement and case. This led us to examine the properties of these languages in more detail. We found, for the most part, that agreement and case morphology are distributed; that is, subjects have one while objects have another. For example, in Finnish, Greek, Hindi (in non-past contexts), Mende, Nubian, Quechua, Turkish, and Welsh, subjects agree while objects take ACC case. In many ergative languages, e.g. Avar, Chechen, and Hindi (in past tense contexts), the ergative is case marked while the absolutive agrees.

One language which distributes case and agreement in this manner is Marathi (Rosen and Wali 1989). In (10), we see that, in the past tense, the ergative has case while the absolutive agrees with the verb.

- (10) Ti-ni keḷi khaa-ll-it.  
she-ERG bananas eat-PAST-AGR  
'She ate bananas.'

Rosen and Wali point out that animate objects take DAT case, as in (11).

- (11) Ti-ni Ravi-laa chal-ḷ-a.  
she-ERG Ravi-DAT torture-PAST-AGR(NEUT)  
'She tortured Ravi.'

A case marked absolutive, however, does not determine verb agreement. In fact, Rosen and Wali stipulate that overt case and verb agreement control are mutually incompatible in Marathi. Thus, we see that Marathi is an economical language; it allows only one type of morphosyntax to identify each nominal, a fact that is expected given the principle of Relational Economy in (9).

While most of the languages in our sample transparently follow (9), our data show a residue of problems for Relational Economy. Our sample included four verb medial languages with agreement: Italian,

system.

Abkhaz (see 14), Kiowa, and Seri, as noted above, are languages in our sample which do not conform with (13).

(14) Abkhaz (Northwest Caucasus): (Nichols 1986)  
a-xàc'a a-ph<sup>o</sup>ə's a-š<sup>o</sup>q<sup>o</sup>'ə M<sup>o</sup>-M<sup>l</sup>ə-M<sup>y</sup>-Hte-y<sup>l</sup>.  
the-man the-woman the-book it-to.her-he-gave-  
finite

'The man gave the woman a book.'

Nevertheless, Nichols (1986) and also, independently, Foster and Hofling (1987) note that their research corroborates (13) and furthermore seek a cognitively-based explanation for this pattern. Nichols says:

... if the verb comes first in a head-marking language, then the grammatical relations (which are marked on the verb) are established at the outset; if the nouns come first in a language having at least some dependent-marked morphology, then the grammatical relations (which are marked on the nouns) are established at the outset. Establishing grammatical relations at the beginning must be communicatively efficacious, in that it streamlines the hearer's processing. [pp. 81-82]

Foster and Hofling propose:

In verb-final languages, neither order nor agreement is sufficient to indicate relations among a string of preverbal NPs. As Greenberg (1966) noted, OSV is a common variant order in SOV languages, often serving to highlight the object NP. Agreement, including verb agreement, is of little aid to the hearer in marking the relations of a string of preverbal NPs, as it only appears sentence-finally in SOV languages. That is, there is no signal of the relationships of NPs until the end of the sentence, thus taxing cognitive processing. [p. 477]

However, the existence of languages like Abkhaz, Kiowa, and Seri, unless one assumes that speakers of such languages are more "cognitively taxed" or these languages are "less efficaciously processed", show that the status of Relational Priority is one of efficiency in the morphosyntax and not necessarily based on deeper parsing strategies. These languages are, after all, economical in using only one morphosyntactic means for identification--agreement. Furthermore, since agreement facilitates pro-drop in these languages, the system is altogether a very efficient one.





- TYPE 1: SVO word order, no case, or agr  
 Malay, Mandarin, Norwegian, Thai, Yoruba
- TYPE 1': SVO, no case, but agreement  
 Fula, Italian, Romanian, Swahili
- TYPE 2: VSO/VOS, agr, no case  
 Fijian, Halkomelem, Ilokano, Tzotzil
- TYPE 2': VSO/VOS, no agr, first nominal has case  
 Malagasy, Tongan
- TYPE 3: SOV, case, no agr  
 Japanese, Korean
- TYPE 3': SOV/free, agr, (almost) no case  
 Abkhaz, Basque, Kiowa, Papago, Seri,  
 Sierra Populca, Tuscarora
- TYPE 4: Little bit of each languages:  
 SVO Hebrew  
 VSO Arabic, Welsh  
 SOV Avar, Chechen, Finnish, Greek, Hindi,  
 Mende, Nubian, Quechua, Turkish

Table 1: The VEP Typology

#### 7. Back to Case Theory

In contrast, if we reconsider GB Case Theory, we find a bad fit between syntax and morphology. Although, it is true that Case Theory is designed more as a theory of abstract case than actual morphological case, there is nevertheless an underlying assumption that morphology will fall into line with the theory for some languages. Lasnik and Uriagereka (1988) credit Jean-Roger Vergnaud with originally seeing the importance of case for the theory and go on to motivate the basic idea of abstract case by drawing a parallel with morphological case.

They say:

Suppose we take the traditional view that NPs are assigned Case. In a language like Latin or German, Case has a clear morphological realization. But suppose this is just a superficial property. Suppose all languages are abstractly like Latin or German, differing only in low-level realization properties. [p. 9]

Thus, we see that Case Theory was originally built around the idea of a NOM-ACC system where case is assigned configurationally as in (1). Languages which have the ideal set of properties listed in (16) would not only be conveniently and transparently treated in GB but they would provide some empirical motivation for rules of that sort:

- (16) a. a subject in the nominative case  
b. subject agreement  
c. an apparent VP constituent  
d. an object in the accusative case

However, such languages are apparently rare. In fact, none of the languages in our survey happened to have these properties.

The fact that most languages deviate from this idealization, often in very radical ways, has resulted in implementation problems currently being busily researched within the theory. Many of the languages of our survey would present difficulties for this view. For languages with NOM case and no agreement, like Korean and Japanese, an invisible agr would be posited.<sup>10</sup> In languages where the object has case but need not be adjacent in the surface structure to the V, like Greek, Maori, Arabic, Japanese, Korean, Welsh, an underlying VP and subsequent movement rules would have to be proposed. It is not clear what one would do with languages with lots of agreement but no morphological case, e.g. Abkhaz, Ilokano, Kiowa, Papago, Seri, Swahili, Sierra Populuca, Tuscarora, and Tzotzil. Perhaps the various agrs would assign case respectively to the relevant NPs; of course, this would be abstract case with no morphological realization whose sole purpose is to allow the NP to pass the Case Filter. Overall it appears that starting with a morphosyntactic system along the lines of (16) creates more problems than it solves.

#### 8. Conclusions

In conclusion, we see that a principle along the lines of Relational Visibility in (4) can supplant the more interesting aspects of Case Theory, namely predicting appropriate patterns of word order and case marking, and can do this without imposing a fictitious morphosyntax upon the languages of the world. Relational Visibility, on the other hand, allows an uninterestingly unrestricted array of morphosyntactic systems. I have proposed here two additional principles--Economy and Priority--which, taken in conjunction with Visibility, provide a typology of morphosyntactic systems with a good fit to the data uncovered by our survey.

APPENDIX

LANGUAGE SAMPLE:

LANGUAGE	BASIC WORD ORDER	CASE	AGR
Abkhaz	SOV		S/O/IO pro-drop
Arabic	VSO/ SV frequently in intransitives	NOM/ACC prep 3s/BEN	VS gender SV gender/# pro drop
Avar	SOV	pst ERG/ non-past ACC	pst ABS/ non-past S g/#, pro-drop
Basque	very free, V final	ERG /misc obl	S,O,IO p/# pro drop
Chechen	SOV	ERG/DAT	ABS g
Fijian	VOS	S/O proper nouns, pronouns	S prefix O suffix pro drop
Finnish	SVO/SOV	ACC/ misc obl	S per,# pro drop
Fula	SVO		S, O, IO, BEN optional pro drop
Greek	free	ACC/ misc obl	S per/# pro drop
Halkomelem	VSO		S, O pro drop
Hebrew	SVO	definite Os	S (pres #/g past p/#/g fut p/#/g) pro drop
Hindi	SOV	split erg erg, acc	pres S p/# fut S g/# pst S g/# O #
Italian	SVO	prons only	S p/# pro drop

Ilokano	VSO		agr E/A (clitics)
Japanese	SOV, free V final	NOM, ACC, misc obl	(honorific S and IO/O only) ellipsis
Kiowa	SOV old info after V	(instr/loc)	S,O,IO p/# pro drop
Korean	SOV, free V final	NOM, ACC, misc obl	(honorific S only) ellipsis
Malagasy	VOS	O (limited)	
Malay	SVO		
Mandarin	SVO		ellipsis
Maori	VSO	ACC	no pro drop
Mende	SOV	pronouns O, tone misc obl	S p/# no pro drop
Norwegian	SVO	pronouns	no pro drop
Nubian (Kunuz)	SOV	ACC	S p/# O # S pro drop
Papago	extremely free word order	one clitic marks O/IO/BEN	S (on aux) p/# O p/# IO/BEN S,O pro drop
Quechua	SOV (free)	ACC, DAT	S p/# O 1st sg pro drop if agrees
Romanian	SVO	GEN pronouns	S pro-drop
Seri	SOV		S,O,IO p/# pro-drop
Sierra Populuca	free		S,O p (subor: ERG,ABS)
Swahili	SVO		S,O pro drop

Tongan	VSO	ERG/(ABS)	
Thai	SVO	misc obl	
Turkish	SOV	ACC (defin)	S p/# pro drop
Tuscarora	SVO/V final		S/O pro drop
Tzotzil	VOS		E/A
Welsh	VSO (quite free)	pronouns misc obl	S p/# pro drop
Yoruba	SVO		no pro drop

### Notes

<sup>1</sup>An unstated assumption akin to Relational Visibility underlies many functionally based analyses. For example, in discussions of the historical changes in English it is pointed out that, as the case and agreement system vanished, word order became more fixed, a chain of events which only make sense from the point of view of Relational Visibility.

<sup>2</sup>However, the information given in Greenberg, and also in works like Foster and Hofling (1987) which used the same sample, was not detailed enough to answer the questions we were posing, for example, how much case did the language have. So we had to return to grammars of the languages for the relevant information.

<sup>3</sup>We especially made an effort to include more Amerindian languages in the sample, since Greenberg is often criticized in this regard.

<sup>4</sup>We checked our impressions of the basic word order of a language against the classifications given in Greenberg 1966, Hawkins 1983, Nichols 1986, and Tomlin 1986.

<sup>5</sup>Striking confirmation for Relational Economy comes from Nichols' (1986) work on Head-Marking vs. Dependent Marking languages. In her sample of 60 languages, she found only two--Aleut and Arabic--which had double marking, that is, constructions which were both head- and dependent-marked, though many languages in her sample had both types of morphology.

<sup>6</sup>Geoffrey Pullum (p.c.) has pointed out that Hixkaryana (Derbyshire 1985), since its basic word order is OVS and both subjects and objects agree, will also be a language which fails to be economical. Like Italian and Swahili, Hixkaryana has pro-drop and apparently

allows a variety of word orders.

<sup>7</sup> Maria Polinsky has suggested to us that Tongan is developing clitic pronominal forms which co-occur with nominals; if this is the case, Tongan is not an exception to priority.

<sup>8</sup> The problem for Maori is deciding whether it is a nominative/accusative or an ergative language; see Hale (1968) for discussion. Under an ergative analysis, Maori would not be an exception to priority.

<sup>9</sup> The only language in our sample which does not fit under one of these types is Maori.

<sup>10</sup> Kuroda (1988) is an interesting exception to this claim.

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