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PROJECT SUMMARY

This project is designed to produce detailed descriptions of the syntax and semantics of the ergative construction in four morphologically ergative languages, Basque, Greenlandic Eskimo, Hindi, and Warlpiri, each of which has an ergative case system. The objective is to develop, in the context of a single theoretical framework, an explanatory account of certain syntactic and semantic phenomena characteristic of this important linguistic type. The theoretical framework of the project is a combination of the Government and Binding theory and a version of model-theoretic semantics. The research on the four languages systematically examines the ergative construction in relation to each of the principal levels of syntactic representation--Logical Form, S-structure, and D-structure--and in relation to the phenomenon of free word order, characteristic of the languages of the project. While the four languages are reasonably representative of their type, the sample is restricted, and the project seeks to off-set this by incorporating three ancillary activities: a survey of the literature on Mayan ergativity (represented in agreement morphology only, rather than case), a semester-long seminar on ergativity, and a conference on ergativity. A book on the theoretical position of morphologically ergative languages is included as an integral part of the project.

0. Introduction.

We propose to carry out a detailed study of the syntax and semantics of the ergative construction in a sample of morphologically ergative languages. Though the phenomenon of morphological ergativity has already been extensively studied, it is still unclear how it might fit into a general theory of the syntax and semantics of natural languages. With the notable exception of Keenan (1987), previous work on ergativity has addressed syntactic issues only, and has been essentially of two types: (i) general descriptive and comparative studies, with little detail on individual languages (eg. Hale 1970, Catford 1976, Comrie 1978, Mel'cuk 1978, Dixon 1979, Plank 1979, van Valin 1981, Marantz 1981, 1984, Levin 1983); or (ii) detailed studies of individual ergative languages (eg. Kleinschmidt 1851, Hale 1973 ff., Woodbury 1975, Vogt 1971, Dixon 1972, 1977, Craig 1977, Harris 1981, England 1983, Aissen 1987), which are difficult to compare because of the diversity of theoretical frameworks used by the authors and because of the lack of overlap in the empirical and theoretical questions asked. Between them, these two types of pioneering studies have led to a consensus on the nature of ergative languages. Except for Dyirbal (Dixon 1972, Levin 1983) and perhaps a few other languages, which are "syntactically ergative", the great majority of languages which employ an ergative case system are believed to be "morphologically ergative" only. That is, in these languages, the subject of an intransitive verb and the patient of an agent-patient verb in the ergative construction are thought to form a natural class which excludes the agent, with respect to nominal case and verbal agreement morphology but not with respect to any syntactic phenomena, such as raising, control, licensing of reflexive pronouns, etc.

This view has been challenged, however, by some recent findings about the syntax and semantics of certain morphologically ergative languages (see sec. 2-4 for details). For instance, it has been discovered that, in (West Greenlandic) Eskimo, the subject of an intransitive verb and the patient of an agent-patient verb in the ergative construction also form a natural class with respect to scope. In this respect, all absolutive NPs in this language--i.e. both the subject of an intransitive verb and the patient of an agent-patient verb in the ergative construction--pattern like nominative subjects in accusative languages: when quantified, they generally have the option of taking wide scope with respect to any other operator in the same clause (Bittner 1987, 1988). There is some, still controversial, evidence that the same may be true in Basque (Levin 1983). According to a standard semantic analysis (Montague 1973), the scope of a quantified NP is its sister in the syntactic structure which is interpreted by compositional semantic rules (henceforth, the *Logical Form (LF)*). Assuming that, the scope parallel between absolutive NP's in Eskimo and nominative NP's in accusative languages suggests that these two kinds of NP's occupy parallel syntactic positions at LF. But if so, then even in morphologically ergative languages--like Eskimo and, more controversially, Basque--the ergativity in the case system is not a purely morphological matter, but interacts with the syntax and semantics of the language as well. This conclusion receives further support from recent work on anaphora in morphologically ergative languages. The available data suggest, eg., that, in Warlpiri (Laughren 1988) and Eskimo, anaphoric dependencies--another structure-sensitive phenomenon--in some respects pattern alike, and differ from the corresponding patterns in accusative languages.

Based on the above recent findings, we have chosen the following sample of morphologically ergative languages: (West Greenlandic) Eskimo, Warlpiri, Basque, and Hindi. This sample seems to us small enough to allow an in-depth study and yet varied enough to guard against spurious generalizations. The

people who would be involved are listed below, with their role in the project, professional affiliation, and language of concentration:

- 1) *Kenneth Hale*; PI; MIT--Warlpiri.
- 2) *Maria Bittner*; PI; Rutgers--(West Greenlandic) Eskimo.
- 3) *Mary Laughren*; postdoc. associate; Yuendumu, N.T. Australia--Warlpiri.
- 4) *Itziar Laka*; consultant; Rochester--Basque.
- 5) *Anoop Mahajan*; consultant; Wisconsin, Madison--Hindi.

The goal of the project is: (i) to provide a detailed description of the syntax and semantics of the ergative construction for each language of the project; and (ii) to try to develop a theoretical account, within a single framework, which would both place this construction in the context of other construction types--passive, antipassive, nominative-accusative, etc.--and explain its characteristic properties, as well as any cross-linguistic variation we may find, in terms of independently motivated syntactic and semantic principles. The theoretical framework we have chosen is the syntactic Government Binding (GB) theory (Chomsky 1981, 1986, et al.) combined with some compatible version of model-theoretic semantics (eg. Montague 1973, Heim 1982, Cooper 1983, Rooth 1987, Bittner 1990). In addition to our familiarity with this framework, this choice is motivated by the following considerations. First, the GB framework provides well-articulated hypotheses about the phenomenon of syntactic ergativity (Marantz 1981, 1984, Levin 1983) and about the universal principles pertaining to structure-dependent phenomena, such as case assignment, agreement, anaphoric dependencies, control, etc. Secondly, the LF trees which the GB theory posits on syntactic grounds can be interpreted by compositional semantic rules which semanticists--sometimes assuming other syntactic frameworks or *ad hoc* syntactic rules--have proposed based on the semantics of quantification, anaphora, etc. For instance, the semantic rules of Montague (1973) go with *ad hoc* syntactic rules, but can also process the LF trees posited by May (1977). This makes it possible to combine the well-motivated semantic component of Montague's analysis with an independently motivated syntax. Finally, for each language in our sample, we have been able to involve in the project at least one linguist who has done theoretical work in the GB framework and is either a native speaker of that language or else knows it very well from extensive previous fieldwork.

The results of the theoretical part of the project will be most directly relevant to other linguists who work in the GB theory or model-theoretic semantics. To the extent that alternative frameworks attempt to answer similar questions, our theoretical results should also be significant--possibly in a transposed version--for compatible frameworks. As a prerequisite for pursuing our theoretical goals, we will develop detailed descriptions, for each language of the project, of several structure-dependent phenomena--including case and agreement patterns, anaphoric dependencies, control, and the syntax and semantics of elements which enter into semantically significant scope relations, such as quantified NP's, wh-phrases, polarity items, negation, adverbs of quantification (Lewis 1975), distributivity operators and cross-categorial operators like *only*. Though most of these topics have been investigated to some extent in some languages of the project (Kleinschmidt 1851, Hale 1973 ff., Woodbury 1975, Davison 1978, Mahajan 1982 ff., Levin 1983, Bok Bennema 1985, Laka 1986 ff., Bittner 1987 ff., Laughren 1988 ff., Srivastav 1988 ff., Ortiz de Urbina 1989, Oyharcabal 1989, etc.), there is as yet no data base which would systematically answer parallel questions for all the languages in the sample. As far as possible, we will try to describe our empirical findings in theory-neutral terms--eg. "this is the question we asked, this is the answer we got, and on this basis we conclude that the absolutive NP is outside the scope of negation" rather than "we found that the absolutive NP is outside the scope of negation". Our empirical findings should

therefore be useful for all linguists who are interested in the phenomenon of ergativity, regardless of their theoretical background.

Section 1 of this proposal outlines the theory of ergativity in the GB framework, and points out that morphological ergativity is still an unsolved puzzle. Sections 2, 3, and 4, are concerned with the manifestations--in morphologically ergative languages with primary emphasis on the languages of the project--of phenomena which our combined, syntactic and semantic, framework predicts to depend in systematic ways on the hierarchical and government relations at LF, S-structure, and D-structure, respectively. By investigating such phenomena, we hope to be able to deduce the structural relations in each of these abstract syntactic representations of the ergative construction, when those relations are not obvious from the surface structure. We assume that the audible surface structure is the Phonetic Form of the sentence, which may differ from the abstract D- and S-structure, if the language allows "scrambling" (Ross 1967). In these terms, all the languages in our project allow scrambling, because they all exhibit free word order to a considerable degree. A full account of the ergative construction in these languages must therefore include a principled account of the relevant "scrambling" processes--the topic of section 5. Finally, section 6 describes the project plan.

1. Ergativity and the GB theory.

1.1. Syntactic ergativity. In descriptive terms, a syntactically ergative language is one in which the subject of an intransitive verb and the patient of an agent-patient verb in the ergative construction form a natural class with respect to their case morphology as well as the syntactic operations and constraints of the language. So far, the only language which has been convincingly shown to be syntactically ergative in this sense is Dyirbal (Dixon 1972). The ergative case pattern of Dyirbal is illustrated in (1)¹.

- (1) a. *payi yara paninyu*
 THERE-ABS man-ABS come-NFUT
 "man is coming"
- b. *payi yara pangkun jukumpiru palkan*
 THERE-ABS man-ABS THERE-ERG woman-ERG hit-NFUT
 "woman is hitting man."

With respect to their case form, the subject of the intransitive verb in (1a) and the patient of the agent-patient verb *palkan* in (1b,c) form a natural class which excludes the agent, because they are in the absolutive case, whereas the agent is ergative. In Dyirbal, the same natural class is found in the context of syntactic phenomena. In control structures like (2), this leads to a very exotic pattern: the controlled, elided, argument is the subject of the purposive adjunct clause, if that clause is intransitive (a); and the patient NP, if it is an ergative clause with an agent-patient verb (b).

- (2) a. *payi yara walmanyu waynyjili*
 THERE-ABS man-ABS get.up-NFUT [_ go.uphill-PURP]
 "man got up [_ to go uphill]"
- b. *payi yara waynyjin yalu*
 THERE-ABS man-ABS go.uphill-NFUT to.here
pangkun tuntungku manjali
 [_ THERE-ERG bird-ERG point.out-PURP]
 "man came uphill towards here [(for) the bird to point _ out]"

¹ The Dyirbal examples (1)-(2) are from Dixon (1972).

2. LF and the semantics of the ergative construction.

2.1. *Goals and assumptions.* In sec.0, we defined the "LF" as that syntactic representation of a sentence which is interpreted by compositional semantic rules. Generally, this is taken to be either the S-structure (eg. Cooper 1983) or some representation which is related to the S-structure in a systematic way (eg. Montague 1973, Kamp 1981, Heim 1982, Engdahl 1986). At this point, we consider it an open question which view is correct. A major goal of the project will be to assess the relative merits of competing analyses of the syntax and semantics of anaphora, quantification, negative polarity items questions, etc., as manifested in the ergative construction, and its passive, antipassive and other alternants, in the languages of the project. What we are looking for is the overall simplest, syntactic and semantic, theory which is empirically adequate and consists of independently motivated principles which apply equally well to English and the languages of the project.

Our null hypothesis is the assumption which since May (1977) has been standard in the GB theory, that the LF of a sentence is either identical to its S-structure (henceforth, the *default LF*) or else derived from it by an optional movement operation, subject to the same syntactic constraints as the operation which derives eg. the S-structure (5b) from the D-structure (5a).

- (5) a. [_S John [_{VP} solved what]] ?
b. what₂ did [_S John [_{VP} solve _2]] ?

This assumption is motivated eg. by certain parallels between the constraints on wh-movement and scope (Rodman 1976, May 1977, et al.) and by the fact that sentences containing quantified NP's are often ambiguous. For instance, on May's analysis, (6) has only one S-structure but two LF's, viz. (7a) and (7b), both derived by the independently motivated movement operation subject to the usual constraints. Interpreted by the semantic rules due to Montague (1973)--by analogy with his "analysis trees", which are isomorphic to (7a,b)--these LF's are assigned the truth conditions (8a) and (8b), respectively--in agreement with the intuitive truth conditions of the two readings of (6).

- (6) At least one student solved every problem.
(7) a. [at least one student]₁ [_S [every problem]₂ [_S _1 solved _2]]
b. [every problem]₂ [_S [at least one student]₁ [_S _1 solved _2]]
(8) a. ($\exists x$: student'(x))($\forall y$: problem'(y))solved'(x,y)
b. ($\forall y$: problem'(y))($\exists x$: student'(x))solved'(x,y)

2.2. *Evidence from default scope relations.* Bittner (1988) proposes the descriptive scope generalization (9) as a candidate for a linguistic universal.

- (9) *Wide default scope for NOM/ABS*
A quantified NP whose case⁴ is characteristic of an intransitive subject in the language has the option of taking widest scope in its clause.

The wide scope option predicted by (9) is a default: alternatives may but need not be available. With respect to their default scopes, nominative and absolutive NP's are thus predicted to form a natural class. Another generalization proposed by Bittner (1988) contrasts this with the class of NP's whose case is not characteristic of either subjects or objects in the language (henceforth, *noncanonical NP's*): the default scope for noncanonical NP's is predicted to be narrow. The evidence for these generalizations comes from

⁴ Once again, we are concerned with Case, a more general notion than case; cf. ftn.2,p.4.

unambiguous sentences which, unlike (6), are restricted to their default readings, eg. (10a)-(11a). The nominative NP in (10a) and the noncanonical NP in (11a) are italicized. As indicated in (10b)-(11b), the scope relative to the negation operator (\neg) is wide for the former, and narrow, for the latter.

- (10) a. *One student* wasn't at the meeting.
b. $(\exists x: \text{student}(x))\neg[x \text{ was at the meeting}]$

- (11) a. There wasn't *one student* at the meeting.
b. $\neg(\exists x: \text{student}(x))[x \text{ was at the meeting}]$

In English and other accusative languages, the fact that nominative NP's can generally take wide scope has been noted before (eg. Lakoff 1970, Jackendoff 1972, Milsark 1974, Ioup 1975, Ladusaw 1979, Babby 1980, Pesetsky 1982, etc.). The new prediction made by (9) is that the same should be true for nominative/absolute NP's in ergative languages like Dyrbal, Eskimo, Basque, etc. In particular, on the default reading of the ergative construction, it is the NOM/ABS patient, not the ACC/ERG agent, which is predicted to take widest scope.

Bittner (1987, 1988) provides considerable empirical evidence that this prediction is borne out in (West Greenlandic) Eskimo. In intransitive and ergative sentences alike, absolute NP's take only wide scope relative to any other operator in the same clause--such as negation, modal, tense, aspect, adverb of quantification, quantified oblique, intensional predicate expressed by the verb (*ujar-* 'seek') or by a suffix on the verb (*-rusug* 'want', *-tit* 'cause', *-nirar* 'say', *-suri* 'believe', etc.). In this respect, the absolute patient in an ergative sentence contrasts with its oblique counterpart in the corresponding antipassive sentence: relative to the same class of operators, the latter was found to take only narrow scope.

These conclusions are based on several diagnostic tests, concerning judgements about: (i) possible scenarios; (ii) paraphrases; (iii) logical inferences; and (iv) discourse anaphora. Tests of this kind can be constructed for any sentence in any language and do not require translation or any formal linguistic training. This is important, because field-work on Eskimo, and other exotic languages, often involves working with monolingual speakers who can think logically but are not trained linguists. To illustrate the diagnostic tests (i)-(iv), consider again (10a)-(11a) in English. Here, the conclusion that, relative to the negation operator, the italicized NP must take wide scope in (10a), but narrow scope in (11a), is supported by the following results. First, English informants accept (10a), but reject (11a), as true in a scenario where four out of five (contextually relevant) students came to the meeting; and judge (11a), but not (10a), to be true, if no students turned up. Secondly, they accept (12), but not (13), as a possible paraphrase of (10a); and (13), but not (12), as a possible paraphrase of (11a). Third, they judge (10a), but not (11a), to be compatible with (14). And, finally, they judge that (10a), but not (11a), can be coherently followed by (15), with the pronoun *he* in (15) understood to "refer back" to *one student*.

- (12) There is one student who wasn't at the meeting.
(13) It is not true that there was one student at the meeting.
(14) John, who is a student, was at the meeting.
(15) He had forgotten all about the meeting.

Analogous test results lead to analogous conclusion in Eskimo. For instance, when Eskimo informants were asked to consider the ergative construction (16a) in a context where John had ordered five books, they judged it true, if John had received four of the five books he ordered, and false, if none of the books had arrived yet. These judgements show that the absolute NP *atuagaq ataasiq* must take wide scope relative to negation. That is, (16a)

is restricted to its default scope reading (16b), predicted by (11); unlike the corresponding accusative construction in English, *John hasn't received one book yet*, it has no reading where the patient NP is in the scope of negation. That this can be attributed to the case of the NP is shown by the judgements about the corresponding antipassive sentence (17a), where the patient NP is oblique. Here, Bittner's scope generalizations predict a narrow scope option, as in (17b). According to native informants, that is the only scope which the oblique NP can take--i.e. (17a) was judged false, if Juuna had received all the books except one; and true, if no book has arrived yet. The results of scenario tests were confirmed by anaphora tests. Thus, when Eskimo informants were presented with (16a)+(18) and (17a)+(18) and asked *uqaluttualiaaqqatut atursinnaava* "could this be used as a little story?", the answer was yes for the former, but no for the latter--suggesting that the former, but not the latter, sequence forms an intuitively coherent discourse.

- (16) a. Juuna-p suli atuagaq ataasiq tigu-sima-nngi-la-a
 J-ERG yet book-ABS one-ABS receive-perf-neg-IND-3sE.3SA
 b. ($\exists x$: book(x))-[Juuna has received x]
- (17) a. Juuna suli atuakkamik ataatsimik tigu-si-sima-nngi-la-q
 J-ABS yet book-INS one-INS receive-AP-perf-neg-IND-3sA
 b. $\neg(\exists x$: book(x)[Juuna has received x])
- (18) Nassiunniqaraluarluni suli apuuti-nngi-la-q.
 it.has.been.sent.but yet arrive-neg-IND-3s
 "It has been sent but hasn't arrived yet."

With respect to their default scopes, then, Eskimo absolutive pattern like nominative subjects in accusative languages: when quantified, they take wide default scope--eg. in (16a), just like in (10a). In accusative languages, the wide default scope for the nominative subject can be explained if we assume that: (i) nominative case is assigned at S-structure to an NP whose sister is the rest of the clause (Chomsky 1980); (ii) semantic rules ensure that the scope of a quantified NP is its sister at LF (Montague 1973); (iii) the default reading of a sentence is obtained by interpreting its default LF, which is identical to the S-structure. Of these, (i)-(ii) are standard, while (iii) is compatible with the syntactic principles of the GB theory and the cross-linguistic semantics developed by Bittner (1990). The same analysis will also explain the scope parallel with Eskimo absolutives, if we further assume that, at least in this morphologically ergative language, "absolutive" is just another name for the "nominative" case feature: being assigned to the same syntactic position, it leads to the same default scope.

The data in (19)-(20) (Levin 1983) suggest that the same may be true about absolutive (nominative ?) NP's in Basque.

- (19) Ez dut ikusi ikaslea. = "I din't see a/the student."
 neg 3s-have-1s see student(ABS)
- (20) Ez dut ikusi ikaslerik. = "I din't see any student(s)."
 neg 3s-have-1s see student(ZERIK)

Levin analyzes the semantic contrast between (19) and (20) in terms of the "definiteness" or "specificity" of the object NP, as indicated in the English translations. But the data she cites are equally compatible with an analysis in terms of scope. On that analysis the alternation (19)-(20) in Basque would be assimilated to (10a)-(11a) in English, (16a)-(17a) in Eskimo, and to other case alternations triggered by negation in Russian, Polish, Finnish, etc. In all such alternations, one finds--in agreement with Bittner's scope generalizations--that the default scope is wide for the NOM/ABS alternant, and narrow

for its noncanonical counterpart. For (19)-(20), either the definiteness of the scope analysis is empirically adequate. But since the predictions are quite different eg. for quantified NP's ("every student", "one student", etc.), we should be able to determine which analysis, if any, is correct. More generally, we will investigate the scope relations in Warlpiri, Basque, and Hindi, in at least as much detail as Bittner (1987, 1988) did in Eskimo. A systematic comparison of Eskimo with Warlpiri is of particular interest because, in both languages, many operators are expressed by bound morphemes on the verb and the data are obtained from informants who, having no formal training in linguistics or logic, are not in danger of confusing their intuitions with their theories. The questions we will focus on include the following. Assuming that "absolutive" and "nominative" are indeed two names for the same case feature, we predict that nominative (absolutive) NP's in Eskimo, Warlpiri, Basque, and Hindi, should be able to take widest scope in their clause--just like nominative NP's in English and other accusative languages, and for the same reason. To what extent is this prediction borne out by the facts? When it fails, what are the actually observed scope patterns? Why?

3. The S-structure of the ergative construction.

3.1. *Evidence from case and agreement.* As already mentioned, the standard theory of case assignment in the GB framework predicts that the subject should get the nominative case, regardless of the transitivity of the verb, whereas the object of a transitive verb should normally get the accusative case (Chomsky 1980, 1981)⁵. This prediction is compatible with the morphological case patterns found in accusative languages, like English, and syntactically ergative languages, like Dyirbal, but not in morphologically ergative languages, like Eskimo, Warlpiri, Basque, or Hindi. Having the A-setting of the syntactic ergativity parameter, accusative and morphologically ergative languages are predicted to have the same, accusative, case pattern. Since Chomsky's (1980, 1981) theory of case assignment was developed based on evidence from accusative languages, the fact that it fails to cover morphologically ergative languages is not a criticism. Nevertheless, it is a problem which has to be solved, if the basic goal of the GB framework--to develop a full-fledged theory of natural language syntax--is to be accomplished.

Most of the existing proposals which attempt to extend Chomsky's (1980, 1981) theory of case assignment to morphologically ergative languages (eg. Levin and Massam 1985, Bok-Bennema and Groos 1984) do so by adding a suitable parameter which, just like the syntactic ergativity parameter (3), has two possible settings: one of these leads an accusative case system, the other, to an ergative system. Unfortunately, any theory of this kind rules out the possibility of split ergativity, i.e. a case system where different sentences in the same language have an accusative or an ergative case pattern, depending on language-specific factors--eg. in Hindi, on the tense and aspect of the sentence and the "definiteness" of the NP's involved. Since the setting of a parameter can vary only for different languages, but not within the same language, any parametrized version of Chomsky's (1980, 1981) theory wrongly predicts that no language will have a split ergative case system, because no language can have both the accusative and the ergative setting of whatever parameter is taken to be relevant.

An empirically adequate theory of case assignment should account, not only for the possibility of split ergativity, but also for the factors which can condition such splits. Judging by the data in Dixon (1979)--though this is not Dixon's own conclusion--languages with split case systems fall into two main classes. In one class, the choice of the accusative or ergative case

⁵ Modulo so-called "quirky" case assignment by verb stems which--like *helfen* in German--assign a stem-specific oblique case--here, the dative case--to the object.

pattern is conditioned by tense and aspect. In the past tense and perfective aspect, the pattern is always ergative, while sentences on the accusative side of the split have a non-past tense or imperfective aspect. Tense-aspect splits have been reported for several languages from the Indo-Iranian branch of Indo-European, including Rajasthani (Allen 1960), Kurdish (Garrett 1989) and Pashto (Garrett 1989). Other examples are Samoan (Milner 1973), Yucatec Mayan (Dixon 1979), Burushaski, a language isolate spoken on the border of Kashmir and Tibet (Lorimer 1935), and Georgian (Vogt 1971). In the other class of languages, the split is conditioned by features of the NPs, eg. person, number, "definiteness", whether the head is a pronoun, name, common noun, etc. Here, common nouns always follow the ergative paradigm, while first or second person pronouns are usually on the accusative side of the split. In this class of languages, Dixon (1979) cites Cashinawa, spoken in Peru, and several Australian languages, including Yidin^y and Arabana. In some languages--eg. Hindi--the split is conditioned by factors of both kinds.

Furthermore, the theory should account for the fact that split ergative languages provide morphological evidence only for three basic case features, viz. NOM (ABS), ACC, and ERG: NOM on the accusative side of the split, and ABS on the ergative side, are never morphologically distinct. For instance, in Hindi (21), an NP in the NOM (ABS) case is morphologically unmarked and agrees with the verb; ACC is also unmarked but, unlike NOM (ABS), does not trigger agreement; while ERG is identified by a postposition, *ne*, and absence of agreement.

(21) Hindi

<i>Accusative side of the split</i>				<i>Ergative side of the split</i>							
a.	raam	roTii	khaataa	taa	c.	raam ne	roTii	khaayii	thii		
	R.(m)	-NOM	bread(f)	-ACC	eat(IMP	R.(m)	ERG	bread(f)	-NOM	eat(PRF.f)	was(f)
	_____ _____					_____ _____					
	"Raam (habitually) ate bread."					"Raam had eaten bread."					
b.	siita-∅	aatii	thii		d.	siita-∅	aayii	thii			
	S.(f)	-NOM	come(IMP	S.(f)	-NOM	come(PRF.f)	was(f)				
	_____ _____					_____ _____					
	"Siita (habitually) came."					"Siita had come."					

The lack of morphological distinction between NOM and ABS, in split ergative languages, is compatible with the hypothesis that NOM and ABS are, not two case features, but two names for the same case feature (cf. sec. 2.2). Still further support for this conclusion comes from the fact that NOM and ABS cross-linguistically pattern alike with respect to case and agreement morphology (22): if they name the same case feature, it cannot be otherwise. For the purposes of (22), the NOM (ABS) form of an NP is the form used for citation and for the subject of a "non-quirky" intransitive verb--i.e. a verb whose subject can bind a reflexive, cannot contain a reflexive, can be controlled, and is in the same case as the agent or patient of an agent-patient verb like *hit*. The reader can verify that the examples cited so far conform to (22). Further evidence for (22c) is given in (23)-(24), where, for each agreement marker, the gloss indicates the case of the NP construed with that marker.

(22) *Case and agreement patterns* ⁶.

- a. If a language has nominal case marking and some case form is morphologically unmarked, then it will be the NOM (ABS) form.
- b. If a language has verbal agreement, then NOM (ABS) will agree with the verb.
- c. If the V...AUX complex contains two agreement markers, one for NOM (ABS) and one for ERG or ACC, then the NOM (ABS) marker will be further away from V and closer to the edge of V...AUX, if AUX is bound, or of AUX, if AUX is separate.

⁶ The generalizations are stated in a strong form, to make clear what the predictions are, though we know that, like most descriptive statements, they have exceptions--eg. Navajo violates (22c), possibly due to a historical development from an ergative to accusative system.

- (23) *Accusative language.*
 Ano is-sa-hottopali-tok (Choctaw, Davies 1986)
 me-ACC 2SNOM-1sACC-hurt-PST
 "You hurt me"
- (24) *Ergative languages*
- a. taku-gu-ssi-nga (Greenlandic Eskimo)
 see-COND-2pERG-1sNOM
 "if you (pl.) see me"
- b. nya-nyi ka-np-ju nyuntu-rlu ngaju (Warlpiri)
 see-NPST PRS-2sERG-1sNOM you-ERG I-NOM
 "You see me"
- c. ch-in haw-il-a (Jacaltec, Craig 1977)
 ASP-1sNOM 2sERG(ACC?)-see-stem.augm.⁷
 "You see me"

The patterns described in (22), and illustrated in (23)-(24), should be explained by a universal theory of case assignment and verbal agreement. Though much work has already been done in the GB framework towards developing such a theory--including research on the languages of the project (eg. Hale 1973, Jelinek 1984, Bittner 1988, Laka 1988, Laughren 1990a, Mahajan 1989a)--the relevant principles are still largely unknown or controversial. Furthermore, no currently available theory explains all of (22). The theory we are looking for should come closer to providing an explanation for (22) as well.

3.2. *Evidence from the Binding Theory.* While the evidence from scope, case and agreement suggests that, in morphologically ergative languages, all NOM (ABS) NP's behave like NOM subjects in accusative languages, the natural classes initially identified by anaphoric dependencies, raising and control phenomena--all of which fall under a set of universal principles, jointly re-ferred to as the *Binding Theory*--are quite different. The first impression is that, with respect to these phenomena, the class of NP's which pattern like NOM subjects in accusative languages consists of the NOM (ABS) NP in an intransitive sentence and the ERG NP in the ergative construction; while the NOM (ABS) patient in the ergative construction behaves like an ACC object.

For instance, in control structures like (25)-(26), the controlled--omitted--argument can be the NOM (ABS) subject of an intransitive sentence (a) or the ERG agent of the ergative construction (b).

- (25) Warlpiri
- a. wangka-mi ka-rna [parnka-nja-karra]
 speak-NPST PRS-1s_i pro_i [_k run-INF-COMP_{k=i}]
 "I_i am speaking [while _i running]"
- b. Ngarrka-∅ ka-∅ wirnpirli-mi [karli-∅ jarnti-rninja-karra
 man-NOM_i PRS-3s_i whistle-NPST [_k boomerang-NOM trim-INF-COMP_{k=i}]
 "The man_i is whistling [while _i trimming a boomerang]"
- (26) West Greenlandic Eskimo
- a. [arpag-tit-lu-ni] Jaaku-∅ uinngiarsur-p-u-q.
 [_k run-while-INF-3s_{k=i}] Jacob-NOM_i whistle-IND-[-tr]-3s_i
 "Jacob_i is whistling [while _i running]"
- b. [illu-ni-∅ sana-tit-lu-gu] Jaaku-∅ uinngiarsur-p-u-q.
 [_i [house-his_i-NOM]_k build-while-INF-3s_{k≠i}] J.-NOM_i whistle-IND-[-tr]-3s_i
 "Jacob_i is whistling [while _i bulding his_i house]"

⁷ The case of the agent is either ERG or ACC, depending on whether Jacaltec has the A- or the E-setting, respectively, of the syntactic ergativity parameter (3).

This is true for all morphologically ergative languages which have been studied, including all the languages of our project.

The same class of NP's (*italicized*) also behaves like NOM subjects in accusative languages, with respect to the licensing of reflexive pronouns and equivalent elements (27). That is, a reflexive element (**bold**) can be licensed by the NOM (ABS) subject of an intransitive sentence--whether basic or derived by some detransitivizing process--or the ERG agent of an ergative sentence (a)-(c), but (in unembedded clauses) cannot be contained in either NP (d)-(e). Both patterns contrast with the behaviour of the NOM (ABS) patient, which--like an ACC object--cannot license (c)-(d), but can contain (b), a reflexive.

(27) West Greenlandic Eskimo

- a. *Jaaku* qatannnguti-**mi**-nit ikiur-niqar-p-u-q.
Jacob-NOM_i brother-**self's_i**-ABL help-PASS-IND-[-tr]-3s_i
 "Jacob_i was helped by his_i brother."
- b. qatannnguti-**ni** *Jaaku-p* ikiur-p-a-a
 [brother-**self's_i**-NOM]_k *Jacob-ERG_i* help-IND-[+tr]-3s_i.3s_k
 "Jacob_i helped his_i brother."
- c. *Piita-p* *Jaaku* atuaga-ati-**mi**-nik nasiup-p-a-a
Peter-ERG_k *Jacob-NOM_i* book-property-**self's_{k/*i}**-INS send-IND-[+tr]-3s_k.3s_i
 "Peter_k sent Jacob_i his_{k/*i} book."
- d. * *Jaaku* qatannnguti-**mi** ikiur-p-a-a.
Jacob-NOM_i [brother-**self's_i**-ERG]_k help-IND-[+tr]-3s_k.3s_i
- e. * qatannnguti-**ni** *Jaaku-mit* ikiur-niqar-p-u-q.
 [brother-**self's_i**-NOM]_k *Jacob-ABL_i* help-PASS-IND-[-tr]-3s_k

Closer inspection, however, reveals that the parallel between the NOM (ABS) patient of an ergative construction and the ACC object is less than perfect. With respect to some binding-theoretic phenomena, the NOM (ABS) patient does not behave like an object. For instance, when embedded under a raising verb (28), it triggers agreement in the matrix clause. This suggests that the NOM (ABS) patient undergoes raising, from the embedded ergative construction into the matrix clause, along with the expected raising of the subject-like ERG NP.

(28) Hindi

raam ne roTii khaayii lagtii thii
 Ram(m) ERG_i bread(f.NOM)_k [_i _k eat(PRF.f)] seem(IMPRF.f) was(f)
 "Ram seemed to have eaten bread." (Mahajan 1989:245)

The same is true for raising in Eskimo. Warlpiri has no raising predicates, and it is controversial whether Basque has any (Eguzkitza 1987:138-40,173).

Furthermore, there is evidence in Warlpiri (Laughren 1988) and Eskimo that, at S-structure, the NOM (ABS) patient in the ergative construction stands in a different structural relation to the ERG agent than the ACC patient to the NOM agent in an accusative language. For instance, (29a) in English has a reading where the name embedded in the agent NP is co-referent with the pro-nominal patient. In this configuration, the principles of the Binding Theory, which apply at S-structure, permit coreference. In Eskimo (31), the coreferent reading is available for the antipassive (a), but not the ergative construction (b). This suggests that the structural relations in (31a) are similar enough to (29a) to be treated on a par by the Binding Theory, whereas those in (31b) are different--perhaps more like those in left-dislocation (29b), where coreference is also excluded (*). The judgements about (30b) generalize to Warlpiri (31) and possibly Basque (Eguzkitza 1987:150-51).

(29) a. Jacob_i's friend helped him_i.

* b. As for him_i, Jacob_i's friend helped him_i.

- (30) West Greenlandic Eskimo
- a. Jaaku-p ikinnguta-a-∅ taa-ssuminnga ikiu-i-v-u-q ≡ (29a)
 [Jacob-ERG_i friend-his_i]-NOM_k him-INS_i help-AP-IND-[-tr]-3s_k
- b. * Jaaku-p ikinnguta-a-ta taa-nna ikiur-p-a-a ≡ (29b)
 [Jacob-ERG_i friend-his_i]-ERG_k him-NOM_i help-IND- [+tr]-3s_k.3s_i

- (31) Warlpiri
- a. * Jakamarra-kurlangu kurdu ka-∅-rla yulka-mi nyanungu-ku
 [Jakamarra-GEN_i child]-NOM_k PRS-3s_k-3_i love-NPST him-DAT_i
 "Jakamarra_i's child loves him_i." (Laughren 1989)
- b. * Jakamarra-kurlangu maliki-rli ka-∅-∅ nyanungu-∅ wyilipi-nyi
 [Jakamarra-GEN_i dog]-ERG_k PRS-3s_k-3s_i him-NOM_i chase-NPS
 "Jakamarra_i's dog is chasing him_i."

Empirical evidence such as the above leads us to reject the claim that, with respect to the Binding Theory, morphologically ergative languages pattern just like accusative languages. While this may be suggested by cursory inspection, more detailed inquiry reveals differences which seem to be systematic and, at this point, are ill-understood. In our research, we will develop detailed descriptions of anaphoric dependencies, control, and raising in the languages of the project, and try to explain at least some of the observed patterns by independently motivated syntactic and semantic principles.

4. The D-structure of the ergative construction.

4.1. Evidence from "reconstruction". The GB theory distinguishes between two types of movement: (i) A-movement--eg. passive, raising--which, given a D-structure, derives an S-structure to which the Binding Theory applies directly; and (ii) A-bar movement--g. topicalization, movement of *who*, *what*--whose effect is ignored by the Binding Theory. That is, the binding principles apply to a constituent which has undergone A-bar movement as if it had not moved at all or had undergone "reconstruction", which restored it to its D-structure position. Whatever the right analysis, "reconstruction effects" can be used to determine the c-command relations in the D-structure of a sentence, when that structure is related to the S-structure by A-bar movement. For instance, one of the universal principles of the Binding Theory requires a reflexive element to be c-commanded by a coindexed antecedent at S-structure or after reconstruction. In Danish (32), this is consistent with the grammaticality of sentences like: (a), whose derivation involves no movement; and (b), where the object containing the reflexive element has undergone A-bar movement--topicalization--and hence can be "reconstructed" back to its object position; and accounts for the ungrammaticality of passives like (c)--where the object, having undergone A-movement, cannot be reconstructed. Amongst the hypotheses we wish to consider is the possibility that the ergative construction may involve A-bar-movement of the patient NP from the object position. This would distinguish it from the passive construction, which involves A-movement instead; and would assimilate the grammaticality contrast between the ergative construction (27b) and the passive *(27e), in Eskimo, to the contrast between topicalization (32b) and passive *(32c), in Danish.

- (32) Danish
- a. Ingen_i kan nægte sit_i barnebarn noget.
 nobody_i can [VP deny self's_i grandchild anything].
- b. sit barnebarn kan ingen nægte noget
 [self's_i grandchild]_k can nobody_i [VP deny _k anything]
- c. * sit barnebarn blev nægtet noget af ingen
 [self's_i grandchild]_k was denied _k something by nobody_i]]

"Reconstruction" also leads to semantic effects--eg. it allows a bound variable interpretation of (32b); and a reading of the raising construction (33), in Eskimo, where the NOM (ABS) NP is in the scope of *-gunar* 'seem'.

(33) Angutit marluk ajunaar-sima-gunar-p-u-t
 [men(NOM) two(NOM)]_i [_i perish-PRF]-seem-IND-[-tr]-3p
 "[Two men]_i [seem [_i to have perished]]"

4.2. *Evidence from incorporation.* Starting with noun incorporation as a paradigm example, Baker (1988) argues that incorporation is a very general phenomenon which should be analyzed as "head-to-head" movement. The moved head need not be a noun, but can be of any syntactic category--eg. a verb *ajunaar-sima-*, in (33). Furthermore, according to Baker, incorporation is responsible for most grammatical function changing processes, including antipassive (a special case of noun incorporation), passive, dative object shift, applicatives, causative clause union, etc. The general prediction is that the head X of an XP complement (i.e. sister) of a lexical item Y can incorporate into Y--eg. the head N of an object NP into the governing V--whereas the head of a specifier or adjunct cannot. Since the input to incorporation is generally the D-structure, this structural constraint can be used to distinguish D-structure objects, on the one hand, from specifiers and adjuncts, on the other. Since, according to Baker's theory, all languages of our project exhibit incorporation to some degree, the study of this class of phenomena should be very revealing. At one extreme, we have Eskimo, a heavily polysynthetic language with productive noun and verb incorporation, as well as passive, antipassive, dative shift, etc.; at the other extreme, there is Warlpiri, whose best approximation to a grammatical function changing process is a semi-productive process, called "conative", involving a shift from an ERG-NOM to an ERG-DAT pattern with a concomittant semantic shift, roughly equivalent to embedding under *try*.

There is some evidence in Eskimo and Warlpiri that the phenomenon of incorporation may be even more pervasive than envisaged by Baker. In these languages, certain operator affixes seem to incorporate into the verb. Thus, Eskimo has a suffix *-innaq* "only" which can attach either to a phrasal category or to the verb. When *-innaq* is attached to the verb, the available evidence--obtained by means of diagnostic scenarios--suggests that its focus must be inside the VP at D-structure. Thus, in addition to the verb, the possible foci for a V-internal *-innaq* include the patient NP, regardless of its case, and the oblique agent of a passive, but not eg. the NOM (ABS) agent of an antipassive nor the ERG agent of the ergative construction. If V-internal *-innaq* is generated at D-structure as the head of a constituent which also contains its focus (eg. *Jaaku-innaq* 'only JACOB') and undergoes incorporation into the verb, then the above constraints on its possible foci would follow: cross-linguistically, heads of objects, and sometimes oblique agents in passives, can incorporate into the verb, whereas heads of VP external subjects cannot. For Warlpiri, our tentative conclusion--based on discourse samples and the intuitions of Hale--is that the domain of quantification for certain quantifier preverbs, eg. *muku* "all", has to be some NP contained inside the VP at D-structure. This suggests that *muku* in Warlpiri--just like *-innaq* in Eskimo--incorporates into the verb from a VP internal D-structure position.

5. "Scrambling".

As mentioned in sec. 0, we assume that the audible surface structure of a sentence is its Phonetic Form (PF). This may differ from the D- and S-structure, if the language allows "scrambling", where the term is used in its most general sense as a cover term for the process or processes which account for free word order. At this point, the theory of scrambling in the GB framework

(Ross 1967, Saito and Hoji 1983, Saito 1985, Hoji 1985, Webelhuth 1989, Mahajan 1989b, 1989c, etc.) is still in its infancy. The principles involved, and even the empirical properties of scrambling processes, are still matters of controversy. Further research is required to determine both the universal patterns of scrambling, and aspects of scrambling processes which are open to cross-linguistic variation. A priori, the Chomsky and Lasnik (1977) model of the grammar leads us to expect at least two types of scrambling: *S-structure scrambling*, which applies between the D- and S-structure; and *PF scrambling*, between the S-structure and PF. The former, but not the latter, should interact with the principles which apply at S-structure or LF, such as the Binding Theory. By contrast, the PF principles--which, at this point, remain largely unknown--should be sensitive to scrambling of either type.

All the languages in our project exhibit considerable freedom of word order. Though the scrambling processes involved are not fully understood, the available data suggest that there are significant cross-linguistic differences within the sample. Thus, both Hindi and Eskimo seem to have S-structure scrambling, but involving different kinds of movement. For Hindi, Mahajan (1990) has argued that leftward scrambling within a clause is an instance of A-movement: it creates new antecedents for reflexive pronouns and does not give rise to weak cross-over effects--just like passive and raising in English. By the same tests, scrambling across a clause boundary, which is also possible in Hindi, involves A-bar movement: it does not create new antecedents for reflexives but gives rise to weak cross-over effects--on a par with topicalization in English. In Eskimo, all scrambling is clause-bound. Unlike clause-internal scrambling in Hindi, however, it is an instance of A-bar movement--judging by the same, reflexive and weak cross-over, tests. Both languages contrast with Warlpiri, where the Binding Theory and the principles responsible for weak cross-over effects appear to apply to pre-scrambling configurations. This suggests that Warlpiri may have PF scrambling only.

At this point, then, we know that scrambling in the languages of the project is different, but not, to what extent or why. By attempting to answer these questions--as part of our quest for a full understanding of the syntax and semantics of the ergative construction--we hope to contribute both to the descriptive literature on scrambling and to the development of a theory of scrambling in the GB framework.

6. Plan of work

The project under consideration here will have a duration of two years, beginning in September of 1991. The goal of the project, speaking in terms of concrete products, will be a book on the syntax and semantics of the ergative construction, co-authored by the PI's. While the evidence for the theory we hope to develop will come primarily from the languages of the project, we will also discuss available evidence on other morphologically ergative languages. Another, less concrete but as important, goal will be a plan for further research on ergativity. The project will be apportioned to the two years as follows: The first year will be devoted primarily to research and consultation among members of the research group, with native-speaking consultants, and with other linguists who will participate in a seminar and conference on ergativity. The second year will be devoted primarily to the writing of a book about the syntax and semantics of the ergative construction.

Throughout the duration of the project, Hale and Bittner will meet once a month at Rutgers to work on their book. These meetings, continued field-work and writing are the only activities planned for the second year of the project, 1992/93. The plan for the first year of the project, 1991/92, is as follows. The consultants, Laka and Mahajan, will have their teaching load reduced by 25% to allow them to devote more time to project-related research. Laughren (post-doctoral associate) will do field-work on Warlpiri in Austra-

lia in the Fall, and will come to MIT for three months in the Spring. In the Fall, Hale, Bittner, Laka and Mahajan will meet twice at Rutgers to give colloquia and to discuss their research. In the Spring, Hale will teach an ergativity seminar at MIT with Alec Marantz; Bittner and Laughren will participate in this seminar. In April, there will be a conference on ergativity at MIT, followed by a third meeting of the research group, this time with all of the members present. In 1991/92, we will also engage the services of a research assistant from among the graduate students of the Department of Linguistics and Philosophy at MIT. In addition to helping to prepare for the conference and seminar meetings, the assistant will do a survey of the topics of this project for the Mayan languages, based on the excellent studies now available for that family (eg. Craig 1977 on Jacaltec, England 1983 on Mam, Aissen 1987 on Tzotzil, Sam-Colop 1988 and Mondloch 1981 on K'iche', etc.).

The conference will be held on Friday and Saturday 24-25 April, 1992. The tentative schedule is as follows (the exact time slots yet to be assigned):

Friday, 24 April, 1992

Morning session: Incorporation (D-structure)

- 1) Sandra Chung (grammatical relations in ergative Polynesian languages)
- 2) Luis Enrique Sam-Colop (antipassive in K'iche', a Mayan language).

Afternoon session: Case and agreement (S-structure)

- 3) Alice Harris (case and agreement in Daghestanian family of Caucasus).
- 4) Mahajan (case, agreement and specificity in Hindi)

Saturday, 25 April, 1992

Morning session: Binding-theoretic (BT) phenomena (S-structure).

- 5) Mary Laughren (BT phenomena in Warlpiri).
- 6) Eloise Jelinek (BT phenomena in ergative North American languages).

Afternoon session: LF and the semantics of the ergative construction.

- 7) Veneeta Srivastav (syntax and semantics of wh-constructions in Hindi).
- 8) Itziar Laka (syntax of negation and other operators in Basque).

The goal of the conference will be: (i) to complement our language sample; and (ii) to interact with other linguists working on ergativity. Towards this end, each presentation (45 min) will be followed by comments from a project member or invited discussant (20 min) and by general discussion (25 min). The invited discussants are Jabe Ormazabal and Myriam Uribe-Etxebarria Goti, both native speakers of Basque and graduate students in the Department of Linguistics, University of Connecticut. In addition to the invited speakers (profiles in Appendix B), discussants, and project members, linguists from MIT and nearby universities will be encouraged to attend.

As field-working linguists, we are aware that theoretical research and fieldwork must proceed in tandem, lest either become sterile without the other. In our project, the researchers on Basque and Hindi are native speakers, while Warlpiri and Eskimo are being researched by non-native speakers. Accordingly, provisions will be made in the project for constant consultation with native speakers of the latter two languages, by means of a fax connection through Laughren in the case of Warlpiri, and in the case of Eskimo, by means of periodic contact with native speakers living in Denmark and Greenland. During Laughren's three-months visit at MIT, Laughren, Hale and Bittner will form a special fieldwork group, whose goal will be: (i) to discuss field methods for syntactic and semantic research in general; and (ii) to develop a specific questionnaire addressing parallel questions about the syntax and semantics of the ergative construction in Warlpiri and Eskimo. Since Hale and Laughren have done extensive fieldwork on the syntax, but not semantics, of Warlpiri, and Bittner has worked almost as much on the semantics, but not syntax, of Eskimo, a joint subproject of this sort is clearly needed, if the syntactic and semantic research program of our project is to be carried out.

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