THE DISCOURSE BASIS OF ERGATIVITY

JOHN W. DU BOIS

University of California, Santa Barbara

This paper examines the phenomenon of ergativity and its relation to patterns of surface grammar and information flow in discourse. Corresponding to the grammatical pattern of ergativity (exemplified in the A vs. S/O distribution of verbal cross-referencing morphology in Sacapultec Maya) there is an isomorphic pattern of information flow: information distribution among argument positions in clauses of spoken discourse is not random, but grammatically skewed toward an ergative pattern. Arguments comprising new information appear preferentially in the S or O roles, but not in the A role—which leads to formulation of a Given A Constraint. Evidence from other languages suggests that the ergative patterning of discourse extends beyond the ergative type to encompass accusative languages as well. Given the linguistic consequences of a type-independent Preferred Argument Structure, it is argued that language-internal phenomena as fundamental as the structuring of grammatical relations can be shaped by forces arising out of discourse, viewed as the aggregate of instances of language use.*

INTRODUCTION

1. The phenomenon of ergativity has long constituted a 'problem' for general linguistics. With recent expansion of interest in language universals, the problematic implications have only been heightened. The bluntness with which the ergative/absolutive pattern stands opposed to the more familiar nominative/accusative pattern has made ergativity difficult to dismiss as inconsequential, or to eliminate by formal sleight-of-hand (although mirror-image formal models continue to attract some with their simplicity). Seemingly, ergativity stands as a challenge to the view that all languages are built on one universal archetype, or one archetypal set of grammar modules.

* Earlier versions of this paper were presented at the West Coast Mayan Symposium, Santa Barbara, April 15, 1981; the American Anthropological Association, Los Angeles, December 4, 1981; the UCLA Linguistics Colloquium, February 12, 1982; the Berkeley Linguistics Society (monthly meeting), April 13, 1982; the Max Planck Institute for Psycholinguistics, Nijmegen, October 4, 1984; and Helsinki University, December 13, 1984. (An earlier brief paper—presenting, in outline, many of the key concepts of the present work—was circulated as Du Bois 1981a; cf. also Du Bois 1981b:285–6.) I wish to thank members of the various audiences for their many helpful and often challenging comments. I especially wish to thank Judith Aissen, Wallace Chafe, Jon Dayley, Mark Durie, Barbara Edmonson, Charles Fillmore, John Haiman, Paul Hopper, Ed Keenan, Tom Larsen, Marianne Mithun, Tony Naro, Johanna Nichols, Will Norman, Doris Payne, Janine Scancarelli, Michael Silverstein, Sandy Thompson, and Alan Timberlake for comments on earlier versions of this work. I also thank my students in my Winter 1984 UCLA proseminar, 'Preferred clause structure in discourse and grammar'; through their questions and comments, often quite challenging, they have improved both my understanding and my exposition of several of the matters treated below. I thank Stephan Schuetze-Coburn and Marian Shapley for statistical advice. Any remaining failings are of course my responsibility.

Special thanks go to my Sacapultec assistants Manuel Lancerio, Petronila Gómez Alecio, and Jacinto Mutás, for help in gathering the Sacapultec materials; and to the many other individuals from Sacapulas who made this study possible. The field research reported here was partially supported by a series of grants from the Survey of California and Other Indian Languages during 1974–1979; additional research support was received during 1981–84 from the UCLA Academic Senate.

Because the problematic character of ergativity impinges most directly on theories of grammar, it is grammarians who have typically risen to meet the problem: head-on, as it were. But the assumption that the task of explaining the grammatical phenomenon of ergativity could be fully addressed through the methodologies, categories, models, and argumentation of the grammarian has not been borne out, if we are to judge by the effectiveness of current offerings aspiring to theoretical elucidation of ergativity (e.g. Marantz 1984). However ingenious syntacticians may have been in devising ways to 'handle' the ergative thorn in the theoretical flank of archetypal universalism, the question remains as to why this thorn should exist in the first place. Why are there ergative languages in the world?

In the present work I pursue a different approach. Through intensive investigation of discourse in an ergative language, I show that certain patterns of information and grammar tend to recur consistently, in preference to grammatically possible alternatives. The recurrent patterns in language use are, as it turns out, isomorphic to the ergative pattern in grammar. The ergative patterning of discourse constitutes the basis, I will argue, of the grammatical phenomenon of ergativity. To the extent that linguists have not previously been aware of the ergative patterning of discourse, they have lacked information crucial to understanding the ergative grammatical phenomenon. Now it becomes clear—given the findings which I will present below—that the theoretical resources of the grammarian were, in themselves, simply inadequate to the task of explaining why ergative languages exist. Only by looking outside the domain of grammar, as it is usually envisioned, is it possible to recognize the actual basis for the existence of this fundamental grammatical type. Of course there are substantial theoretical consequences to a claim that something as fundamental as a language's system of grammatical relations should be shaped by influences deriving from patterns of language use. I will argue that just such an influence is realized via the grammaticization of recurrent patterns in discourse.

What I seek, then, is to demonstrate the discourse basis of ergativity. I will present my arguments principally in terms of results from my intensive study of discourse patterns in one ergative language, Sacapultec Maya; but I will touch briefly on other languages (including accusative ones) in assessing the potential universality of the proposed discourse patterns. Following presentation of some background on ergativity in general and in Sacapultec, I will present my evidence for the existence of preferred patterns of information and grammar in discourse. Based on these findings, I will propose a set of discourse constraints which limit both the quantity of information that is treated within a clause and the grammatical role which this information may occupy. I will show, in short, that the flow of information in discourse has a grammatical shape—which is, in certain key respects, ergative. After considering how the proposed discourse patterns generalize to other languages, I briefly address the implications of my findings for studies of information flow and of ergativity, and for theories of the relation between discourse and grammar itself.

1.1. PRELIMINARIES. Adequate treatment of ergative phenomena requires terms which make the necessary distinctions without distorting or prejudging their interpretation. It is by now rather widely recognized that the descriptive term 'subject' in its traditional sense significantly distorts the phenomenon of ergativity. The standard textbook statement of the ergative pattern—that the subject of an intransitive verb and the direct object of a transitive verb receive one treatment with respect to nominal case-marking, verbal cross-referencing etc., while the subject of a transitive verb receives a different treatment—hardly makes ergativity sound like a 'natural' phenomenon. It would seem somewhat perverse in splitting up an apparently basic category like subject, assigning half its contents to a contrasting category like object. This perception of unnaturalness is of course only an index of our failure to apprehend the actual basis of ergativity, a difficulty which is simply reinforced by traditional grammatical terminology.

Dissatisfaction with school-grammar categories has led most scholars who deal seriously with ergativity to adopt more neutral terms. Thus Dixon (1972:128; 1979:59, 61; 1987) makes a three-way distinction between A, S, and O, where A is the 'transitive subject', S the 'intransitive subject', and O the 'transitive object' (cf. Comrie's A, S, and P, 1978:332).[1] This type of discrimination—where the intransitive subject receives its own symbol—neutralizes the bias implicit in the traditional received categories, and opens the way for a more effective investigation of grammatical relations.

It is tempting for functionally oriented linguists to interpret the transitive categories labeled A and O (or A and P) as agent and patient, respectively; but this does not do justice to the complexity of the semantic correlates of the grammatical roles in question—or, even less, to the complexity of the adaptive grammaticization processes which have shaped these grammatical roles (Du Bois 1985a:357). Comrie himself (1978:331), while recognizing 'a high correlation between the semantic opposition agent/patient and the syntactic oppo-

[1] Sometimes St and Si are used instead of A and S, respectively (e.g. Keenan 1984).

A partly semantic meaning for the A, S, and O symbols has been suggested; e.g., Dixon (1979:108) characterizes A as 'the NP in a TRANSITIVE clause which CAN BE AGENT', O as 'the OTHER OBLIGATORY NP in a TRANSITIVE clause', and S as 'the ONLY OBLIGATORY NP in an INTRANSITIVE clause'. Reflecting this variation between syntactic and semantic definitions, he has called A, S, and O 'universal semantic/syntactic primitives' (1979:59)—or, sometimes, 'universal syntactic/semantic functions' (1979:108). Silverstein (1976:125) also has used A and O with what sound at first like semantically oriented glosses, referring to 'the propositional function A, agent of transitive' and 'the propositional function O, patient of transitive'; but NP's are said to serve in 'Agent or Patient grammatical function' (1976:123). In specifying transitivity of the verb, Silverstein effectively incorporates a (presumably) grammatical component into the definitions: he refers to the S category (at least in three-way O-A-S systems) simply as 'subjective' (1976:112). Comrie (1978:330–31), in defining his symbols A, S, and P, says that '*A* refers to that argument of a transitive verb which would be its subject in a non-ergative language like English ... *P* refers to the argument that would be the direct object', while '*S* refers to the single argument of an intransitive verb.' Dixon 1987 opts for the straightforwardly grammatical definition of what he points out are by now 'fairly standard abbreviations': S is intransitive subject, A is transitive subject, and O is transitive object. This usage is the one I follow.

sition A/P', nevertheless refuses to collapse the two; he points out that, in sentences like *John underwent an operation*, the referent of *John* is an A but not an agent.[2] In this paper, I will use the symbols A, S, and O in Dixon's grammatical sense (as quoted above); however, in my usage the symbols will always be applied to roles in surface, not deep, grammar. (I will use the term 'argument' to refer to just these 'core' or 'direct' grammatical relations to the verb—A, S, and O—but not to obliques, possessors etc.)

Where the traditional 'subject'-based schema makes the ergative/absolutive categories seem to run against the grain of universal primitive categories, the three-term schema allows us to see that the role labeled S is not necessarily predestined to be treated like A, but could as well be aligned with O (Dixon 1972:128): one language groups S with A (the accusative type), while the next groups S with O (the ergative type). In this light, Dixon (1979:61) displays the structural contrast between ergative/absolutive and nominative/accusative organization as follows (cf. Sapir 1917:86, Fillmore 1968:54, Dixon 1972:139–40, and Comrie 1978:332):

(1) nominative $\left\{\begin{matrix} A \\ S \end{matrix}\right\}$ ergative

accusative $\left\{\begin{matrix} S \\ O \end{matrix}\right\}$ absolutive

Once it is recognized that the categorial alignment of S is pivotal, it should become clear that, in the end, it will be necessary to address two parallel questions: not only of what links S with O in ergative systems, but also of what links S with A in accusative systems.[3] No doubt Western linguists have seldom felt obliged to explain the grouping which is characteristic of accusative languages—especially given the widely assumed correlation of 'subject' with such important features as humanness, agency, definiteness, and topicality—but this task is, in principle, necessary.

Why should some languages place S with O in an absolutive category? Dixon, who stresses the existence of 'semantic factors that lead to the grouping of S and A as the universal deep-structure category "subject"', has expressed a view which is no doubt widely assumed: 'There do not appear, in the same way, to be any universal phenomena that must link S and O' (1979:118).[4] Of course, some semantic resemblances between a subset of instances of S and O have been discerned even in accusative languages (Chafe 1970a, Fillmore 1968, Keenan 1984; cf. Chafe 1970b, Harris 1982, Moravcsik 1978). While such semantic linkages between S and O help to offset the perception that a grouping

[2] Even appeals to 'prototypical' semantic or pragmatic features of A, S, and O are unfortunately liable to short-circuit the complex network of grammaticization processes. A full discussion of this question goes beyond the scope of this paper; for present purposes, however, it is preferable to follow Dixon's 1987 statement of grammatical usage for the A, S, and O symbols.

[3] The existence of a third major type, the active (cf. Chafe 1970b, McLendon 1978, and especially Merlan 1985), raises important questions about the semantic bases for the grammaticization of grammatical relations. However, these must remain outside the scope of the present paper, since appropriate discourse studies of such languages are only now starting to become available.

[4] However, Dixon 1987 holds that, given the Sacapultec discourse patterns and other such evidence, there are indeed important factors linking S and O.

of S with A is inevitable—or the only 'deeply' motivated grouping—they must nevertheless be granted rather slender force in the face of the more obviously substantial motivating factors, pragmatic as well as semantic, which have been recognized as linking S and A.

But more powerful factors linking S and O can indeed be identified—in the domain of information flow in discourse. Before I can establish this, I must first lay out the relevant grammatical background, as exemplified in one particular ergative language.

1.2. ERGATIVITY IN SACAPULTEC. Sacapultec Maya is a language of the Quichean branch of the Mayan family, spoken in highland Guatemala (Du Bois 1981b, 1985b). Typologically, it has verb-initial order (so-called VOA); but it allows most of the alternative role-orderings, as governed by discourse-pragmatic factors. Sacapultec is a highly consistent head-marking language (cf. Nichols 1986:69, 81). It is ergatively patterned in its morphology, as well as in some aspects of its syntax.[5] As in all Mayan languages, the ergative patterning of Sacapultec morphology is entirely in the verbal cross-referencing inflection; nouns are not case-marked for grammatical relations.

Transitive verbs in Sacapultec obligatorily 'cross-reference' (or 'register') both the A and the O arguments (i.e. both transitive 'subject' and 'object', in the traditional terminology), by indexing person and number for them—in addition to grammatical role, as absolutive or ergative:[6]

(2) *š-at-qa-kuna-:x* 'We cured you (sg.)'
CMP-2sg.ABS-1pl.ERG-cure-TA

(3) *š-ax-a:-kuna-:x* 'You (sg.) cured us.'
CMP-1pl.ABS-2sg.ERG-cure-TA

In 2, *at-* cross-references a 2sg. O role argument, while *qa-* cross-references a 1pl. A role argument. In 3, *ax-* cross-references a 1pl. O role argument, while *a:-* cross-references a 2sg. A role argument.

[5] Syntactic ergativity in Mayan remains outside the scope of the present paper; but see Smith-Stark 1978, Larsen & Norman 1979, Dayley 1981, England 1983.

[6] In Mayan linguistics the ergative person-number-role affixes are traditionally known as 'Set A' affixes, while the absolutive affixes are known as 'Set B'. For certain reasons, these more neutral terms are generally preferable within Mayan linguistics (cf. Du Bois 1981b; Ayres 1983:22, fn. 5); for the present paper, however, it will be clearer to use the more widely familiar terms 'ergative' and 'absolutive', since these give rise to no distortion in the issues under immediate consideration.

Abbreviations and special transcription symbols used in this paper include the following:

A	transitive subject
ABS	absolutive prefix (Set B)
CMP	completive aspect prefix
ERG	ergative prefix (Set A)
IF	intransitive phrase-final suffix
INC	incompletive aspect prefix
FOC	focus particle
MVT	movement affix (lative)
N	noun phrase
O	(transitive) object

Intransitive verbs cross-reference the S role argument for person and number (in addition to absolutive role):

(4) *š-ax-war-ek* 'We slept.'
CMP-1pl.ABS-sleep-IF

(5) *š-at-war-ek* 'You (sg.) slept.'
CMP-2sg.ABS-sleep-IF

The classic ergative morphological pattern is illustrated in the fact that a single prefix (*ax-*) marks 1pl. for either the O role (as in 3, glossed 'us') or the S (as in 4, glossed 'we'); a distinct prefix (*qa-*) marks the 1pl. for the A role (as in 2, also glossed 'we'). Similarly, the prefix *at-* marks either the O (2) or the S (5) for 2sg., while the prefix *a:-* marks 2sg. A (3). Note that the 3rd person non-plural absolutive prefix is a zero morpheme; by this I mean simply that it represents a NOTICEABLE ABSENCE from a specific, structurally defined, paradigmatic position (cf. Du Bois 1987a).[7] The Ø cross-references either the O of a transitive or the S of an intransitive:

(6) *k-Ø-a:-kuna-:x* 'You (sg.) cure him.'
INC-3.ABS-2sg.ERG-cure-TA

(7) *k-Ø-war-ek* 'He sleeps.'
INC-3.ABS-sleep-IF

Full NP's and independent pronouns may occur ('optionally') in the clause, along with the appropriate cross-referencing affixes:

(8) *k-Ø-war l ačeŋ* 'The man sleeps.'
INC-3.ABS-sleep the man

(9) *e: ra ax k-ax-war-ek* 'WE sleep.'
FOC the we INC-1pl.ABS-sleep-IF

Note that a pronoun can appear in a sentence like 9 as an independent word (in fact, a phrase)—in addition to the cross-referencing prefix, which is obligatory—but the independent pronoun is rare except in contrastive contexts.[8]

PL	plural
OBL	oblique
PSR	possessor
S	intransitive subject
SG	singular
TA	transitive active voice suffix
TF	transitive phrase-final suffix
V	verb
..	short pause or break in speech rhythm
...	longer pause (half second or more) [NOT used to indicate ellipsis]
:	phonemic vowel length
=	prosodic lengthening of preceding segment
"	resonant devoicing rule not applicable

[7] This Ø prefix is analysed as non-plural (lacking the positive mark [+plural]), rather than singular, and is glossed as 3.ABS rather than 3sg.ABS—since, under certain circumstances, it can cross-reference plural referents (Du Bois 1981b; cf. ex. 10c).

[8] This, incidentally, means that the etymological sense of the term 'cross-referencing' is somewhat out of place in sentences like 6–7 (cf. Mithun 1986); but the familiar alternatives (e.g. 'agreement') are no better. A less widely used but possibly better term would be 'registration' (of person/number/role on the verb).

1.3. ANALYSING INFORMATION FLOW IN DISCOURSE. I turn now to issues bearing on my approach to the discourse evidence. In recent years, questions of information flow and the 'packaging' of information have received considerable attention from researchers on discourse. It has been recognized that semantic content is not simply transmitted as such, but must be 'packaged' for appropriate assimilation by the hearer. The packaging of new information must take account of old information, including both that communicated in the prior discourse (and the situational context—Chafe 1976, 1979, 1980b, Du Bois 1980b) and the unverbalized information that the speaker and hearer share as implicit knowledge of the world, represented in frames, schemas, scripts etc. (Fillmore 1977, Du Bois 1980b). New information must virtually always be integrated within a framework of shared (old) information, in order to be usefully interpretable; hence, in natural discourse, almost all messages contain both types of information. Typically, the larger part of a message will consist of given or presupposed material, while 'only a small chunk consists of the actual message, new information' (Givón 1975:204).

To treat the question of how patterns of information flow in discourse come to be grammaticized, it is necessary to provide some background both on the nature of information flow and on my means for extracting the appropriate information from my data. If one takes the position, as I do, that 'Grammars code best what speakers do most' (Du Bois 1985a:363), then it becomes necessary to discover what linguistic patterns speakers most commonly use. This requires systematic investigation of a body of instantiated language use. In the rest of this section, I present the key analytical concepts employed in my discourse and grammar research, and then indicate how I have extracted the necessary information about them from my discourse materials.

My corpus for this study comprises a set of narratives about a short film, as told by speakers of Sacapultec. As part of a wide-ranging investigation of the verbalization of experience (Chafe 1980a), a brief film was designed without dialog, but interpretable in some fashion to members of any culture. This film—which has become widely known as the 'Pear Film', and has been shown to speakers of numerous languages around the world—portrays a boy who makes off with a basket of pears on his bicycle, and has various adventures. I showed this film in Guatemala to a group of native speakers of Sacapultec; afterwards, each speaker was taken individually into a separate room to be interviewed by another Sacapultec, of the same sex as the interviewee (Du Bois 1980a). The interviewer explained that she (or he) had not seen the film, and asked the speaker to tell what had happened in it. The ensuing narration was tape-recorded, and later transcribed by myself and my Sacapultec assistants. While these narratives are not embedded in everyday Sacapultec conversation, it was deemed important to obtain a body of narrations which would be comparable, in that they were performed by a variety of individuals speaking about the same content. Also, since I needed to make accurate distinctions between information treated as new and information treated as given at any point in the discourse, it was crucial to control for the amount of special background knowledge of the narrated event that might be shared uniquely between speaker and hearer (i.e. knowledge other than that shared by all participants in Sacapultec

culture). With the film approach, the narrator knew that the interviewer had not seen the film, and thus effectively could not rely at all on special shared knowledge about it. The corpus which I developed comprises a set of relatively comparable narratives, elicited under partly controlled conditions, from eighteen native speakers of Sacapultec.[9]

Once my assistants and I had transcribed the narratives, with special attention to hesitation and intonation phenomena, it was necessary to analyse them into units which would be appropriate for the analysis of spoken discourse. Past research on language has, for a variety of reasons, tended to take the sentence as the basic unit of description and theoretical generalization; however, the most likely candidates for the status of basic information-flow units for spoken discourse are smaller than the sentence. The clause, defined grammatically, and the 'intonation unit', defined phonetically, have each been proposed by different discourse researchers. (In practice these two units often coincide.) Givón hypothesizes (1983b:7) that the clause is 'the basic information processing unit in human discourse' (cf. also Pawley & Syder 1977, 1983, Chafe 1980b, 1987). Other discourse researchers have proposed a similar role in spoken discourse for the intonation unit, defined as a stretch of speech uttered under a single coherent intonation contour; in addition, it is frequently demarcated by an initial pause. Chafe has hypothesized that the units so delineated represent 'linguistic expressions of focuses of consciousness' (1980b:15). Svartvik and colleagues have adopted this view, treating intonation units (or 'tone units', as the London–Lund researchers call them) as 'psycholinguistically valid units of segmentation in spoken English' (Eeg-Olofsson & Svartvik 1984:53; cf. Svartvik 1982), and hypothesizing that intonation units are largely 'independent processing units typical of spoken discourse', which participate in the 'distribution of information into sequential information units'.

Because the clause and the intonation unit so often coincide, the positions of their respective supporters are closer than they might otherwise seem. My analysis attended to both intonation units and clauses. I segmented each of the 18 texts into intonation units: stretches of speech which appear under a single intonation contour, and are typically bounded by a pause (see Cruttenden 1986:35–45 for further discussion of identifying criteria.) In the present corpus,

[9] Of the Pear Film tellings recorded, those which did not reach a minimum length of ten intonation units of narration about the film story (roughly, ten clauses—see below), without prompting from the interviewer, were excluded from the corpus. This criterion was considered minimal for a fairly complex film which often elicited narratives of several times this length; it excluded principally narrations by speakers who seemed not to want to perform the task of telling the story (or who had never seen a film before). The result is a corpus of narrations by 18 native speakers of Sacapultec, 15 female and 3 male. (A body of repeat tellings collected from the same speakers, 6–8 weeks later [Du Bois 1980a:6–7], has not been analysed. Note that the preliminary findings presented in Du Bois 1985a, which differ slightly from the full-corpus findings presented here, were based on a subset of the present corpus, consisting of narratives by 7 speakers.)

Ultimately, one would like to know more about what Sacapultec speakers do in such genres as folk tales, oratory, ritual speaking, and especially conversation; but for present purposes this corpus provides a good starting point, I believe, and is viable for elucidating the kinds of discourse phenomena under investigation in this study.

most intonation units were simple clauses. Another key unit in my analysis was the 'clause core'—a subset of the intonation unit, consisting of a verb (or predicate nominal or adjective) and its (core) argument NP's, but excluding oblique nominals. (Where it will create no confusion, I will refer to the clause core more succinctly with the term 'clause'.)

Following is a sample of the first few intonation units of the first speaker's narration:

(10) a. . . . *e: š-Ø-inw-il-aŋ,*
FOC CMP-3.ABS-1sg.ERG-see-TF
'What I saw was,'

b. . . *š-Ø-aq'an xun ačeŋ . . ču? če:?,*
CMP-3.ABS-ascend a man atop tree
'a man climbed up a tree,'

c. . . . *š-Ø-a-r=. . .-č'up-o? nik'yax pe:ra-s.*
CMP-3.ABS-MVT-3sg.ERG. . .-pick-MVT some pear-PL
'he went and picked some pears.'

d. . . . *tik'ara? Ø-Ø-qa:x-u:l,*
then CMP-3.ABS-descend-hither
'Then he came down',

e. . . . *Ø-Ø-r-su? r-i:x xu:=n,*
CMP-3.ABS-3sg.ERG-wipe its-skin one
'he wiped one off', [etc.]

Each line represents one intonation unit, as it falls under a single intonation contour (and additionally shows the characteristic bounding pause). I will return to this text sample below.[10]

I then identified all the reference forms in the texts—i.e. the NP's, independent pronouns, and cross-referencing affixes (bound morphemes). I grouped each cross-referencing affix with the free form (NP or independent pronoun) which it cross-referenced, in a unit that I call a MENTION: this is defined as a reference item complex consisting of either a bound form alone (a cross-referencing affix, as in 2–7, 10a, and 10d above), or an overt free form (full NP or independent pronoun) plus its cross-referencing bound form within the same clause (as in 8–9, in the S role argument of 10b, and in the O role argument of 10c and 10e). Thus a coreferential pair of forms comprising a full NP with its cross-referencing affix (as in 8–9) are treated as one mention rather than two.

Key grammatical, semantic, and pragmatic features were recorded for each mention in the corpus, including the following: (a) morphological type; (b) inherent semantic class of referent; (c) grammatical role; and (d) information status (activation state). I explicate each of these in turn below—commenting, where appropriate, both on the theoretical status of the categories involved and on the operational criteria for identifying instances in the data.

[10] Space limitations preclude presentation of more here; however, I have published this narration in its entirety (i.e. all 50 intonation units) in Du Bois 1987c, along with a clause-by-clause analysis of its information flow patterning, providing extensive specific illustration of the general claims made in the present article.

(a) MORPHOLOGICAL TYPE. Mentions were classified according to the morphological type of their (surface) realization, as lexical, pronominal, or affixal. A lexical mention consists of an overt full NP, with its cross-referencing affix; a pronominal mention consists of an independent personal pronoun (1st, 2nd, or 3rd person) with its cross-referencing affix; an affixal mention consists of a cross-referencing affix alone, with no overt free form (no full NP or independent pronoun).

In Sacapultec discourse, independent pronouns are rare; mentions that would be realized pronominally in a language like English are realized affixally. The major contrast I will make below is between lexical and non-lexical mentions. This contrast is of more than merely grammatical significance, given that lexical verbalization involves selection from a large open class, in contrast to pronominal or affixal verbalization; it thus carries more information (in the sense of information theory). Various studies of discourse factors which govern the choice between NP's, pronouns, and zero anaphora in discourse (Chafe 1976, Clancy 1980, Givón 1983a, Fox 1984) have pointed out the link of NP's with discourse-pragmatic statuses such as new information. Recent work by Givón et al. 1985 has suggested important differences in the way speakers process lexical and non-lexical (especially pronominal) mentions in discourse.

(b) INHERENT SEMANTIC CLASS OF REFERENT. Each mention was classified according to the inherent semantic class of its referent, as human or inanimate. (I would recognize the class of animals as intermediate between these two—[+sentient, −human]—but there were no mentions of animals in this corpus. The question of whether animals will pattern more like humans or like inanimates in the dimensions defined below thus remains open.) The few mentions of body parts were grouped with inanimates. A small number of mentions were not classifiable as either human or inanimate; e.g., in Sacapultec constructions like *-b'an čoka:r* 'collide' (lit. 'do colliding'), the nominal *čoka:r*, borrowed from the Spanish infinitive *chocar*, functions grammatically as the object of the transitive verb *-b'an*. The few such nominals were classified under the label 'grammatical'; they were left unclassified in the scheme of information statuses (see below), and omitted from the counts reported below.

(c) GRAMMATICAL ROLE. Each mention was classified according to surface grammatical role as A, S, O, oblique, or possessor (or one of various minor roles).[11] Given the interest in the scalar quality of transitivity—and in its semantic and pragmatic correlates—which has been generated by Hopper & Thompson 1980, it is worth pointing out that several morphosyntactic features of Sacapultec (most of them common to all Mayan languages) combine to make identification of transitivity and surface grammatical role more straightforward

[11] A small number of mentions in the texts were assigned to one of a small set of minor roles—including vocatives (proper names used in address); marked topics (NP's which are topicalized and set off in a separate intonation unit without a verb, and usually precede a predication about the same referent in the immediately following clausal intonation unit); and predicate nominals (non-referential nouns functioning as predicates in an equational construction). Since there were relatively few of each of these types (19 instances of marked topic, and fewer of the others), it was not possible to arrive at a significant characterization of the distinctive role of each in the discourse patterns described below. Where appropriate, they have been grouped under the label of 'other (non-argument role)'.

than in many other families. Sacapultec cross-referencing morphology explicitly differentiates surface ergative (A) vs. absolutive (S/O) grammatical roles; verb roots fall with strict complementarity into either the transitive or the intransitive class (i.e. transitive/intransitive bivalency is absent); valence changes are consistently indexed through voice inflection. Furthermore, in certain circumstances, grammatical transitivity is overtly marked on the surface through suffixes which can differentiate transitive verbs (e.g. *-:x* active voice transitive, as in exx. 2, 3, 6) from intransitive verbs (e.g. *-ek* phrase-final intransitive, as in 4, 5, 7, 9). Thus Sacapultec (like other Mayan languages) explicitly indexes a strictly dichotomized and grammaticized contrast between transitive and intransitive verbs. The scalar quality of semantic and pragmatic factors underlying the transitivity dimension, as elucidated by Hopper & Thompson, seems much less in evidence in the surface grammar of this language than in many others. The conjunction of an explicit and consistently dichotomized transitive/intransitive verbal contrast with an explicitly indexed ergative vs. absolutive contrast allows A, S, and O to be readily differentiated in texts on the basis of criteria which are evident in surface grammar. In this study, then, the surface grammatical roles are identified as follows: S is a mention which is the sole argument of an intransitive verb (and is cross-referenced absolutively on the verb), or the subject of a non-verbal ('equational' or 'copular') predicate; A is the argument of a transitive verb which is cross-referenced ergatively; O is the argument of a transitive verb which is cross-referenced absolutively. Obliques are mentions, other than possessors, which are not cross-referenced on the verb (these are almost always headed by a preposition, including the inflected prepositions known to Mayan specialists as relational nouns). Possessors are mentions which are not heads of their NP's, but which are cross-referenced as possessors of nouns which are heads. This adherence to surface grammar, while no doubt mechanical, has the advantage of avoiding the uncertainty which may attend investigator judgments of such things as degrees of agency or even degrees of transitivity, when these are not directly marked as such.

The individual grammatical roles distinguished above are grouped into two larger classes with distinct significance. Given the centrality of grammatical relations for this study, it is necessary to attend consistently to the distinction between elements which bear a direct grammatical relation to the verb and those which do not (§3.3). Argument nominals (A, S, O) bear this relation, and thus participate in the ergative/absolutive structural opposition. Obliques, not bearing such a relation, remain outside this structural system. Thus, in tabulating discourse patterns in the texts, I distinguish 'core' or 'direct' arguments (i.e. A, S, and O) from non-arguments (primarily obliques and possessors, but also various minor roles; see fn. 11). While we should not overlook the considerable importance of the functions of obliques in discourse, the roles A, S, and O are eligible to participate in the structuring of grammatical relations in ways that other roles are not.[12]

(d) INFORMATION STATUS (concept activation state). The significance of the

[12] Ultimately, to be sure, it will be worthwhile to clarify the basis, whether functional or otherwise, for the argument vs. non-argument contrast; but that is beyond the scope of this paper.

traditional categories of 'given' and 'new' information has been clarified by Chafe 1987, who refers them to the actual processes of information transfer by language users. Corresponding to the traditional term 'given' (or 'old') information, Chafe defines an 'already active concept' as one that is 'currently lit up, a concept in a person's focus of consciousness [roughly, in short-term memory] at a particular moment'. Corresponding to the traditional term 'new' information, a 'previously inactive concept' is one which is 'currently in a person's long-term memory', but is not yet activated. Intermediate between these two, a 'semi-active concept' is one that is 'in a person's peripheral consciousness, a concept of which a person has a background awareness, but one that is not being directly focused on'. An already active concept tends to be realized linguistically in an attenuated form (in some languages, by an unstressed pronoun; in others, affixally); it may even be omitted from verbalization (what is often interpreted as nominal 'zero anaphora' or 'deletion') (Chafe 1976:31, 1987). A previously inactive concept is often realized as a full NP, sometimes with strong stress. According to Chafe, concepts which have been active become semi-active after a period of not being mentioned. In the present paper I will use these analytical categories as Chafe has formulated them, but I retain the traditional terms 'given' and 'new' as equivalents to 'active' and 'inactive', respectively; for Chafe's 'semi-active', I use 'accessible'.

Because of the nature of my text data, it was necessary for me to develop operational definitions for the categories of given, accessible, and new—to allow me to classify mentions on evidence, not directly cognitive, which was accessible to me within the texts. Thus I classified a mention as GIVEN if it referred to an entity mentioned previously (except as indicated below); or if the referent was notably present in the context of situation, as in the case of the speaker and addressee. As Chafe notes (1976:31–2), 'the speaker and addressee are regularly treated as given' by speakers (cf. Silverstein 1976:146). I classified a mention as NEW if it referred to a referent that had not been mentioned previously (and was not the speaker, addressee, or a frame dependent as described below). I classified a mention as ACCESSIBLE (a) if it was part of a previously evoked, entity-based frame (Fillmore 1977, Du Bois 1980b:236), although previously unmentioned; or (b) if it had been mentioned previously, but more than 20 intonation units previously (cf. Givón 1983b:13 for similar measures of referential distance or 'look-back')—a situation which arose rarely. Over-all, accessible mentions were by far the least common. In most of the discussion below, I contrast the classes of NEW and NON-NEW, since accessible mentions seem to pattern most like given mentions in the matters investigated here.

In coding the data for the three information statuses—given, accessible, and new—I have undertaken to classify only nominal references (lexical or non-lexical); I exclude verbs, adverbials etc., for reasons both practical and theoretical. Practically, information status for nominals is more amenable to reliable operational definition and quantification. For a variety of reasons, it is easier to decide whether a nominal reference to an entity is new or not, or whether

there are one or two new entities within a single clause, than it is to decide whether a particular sequence of verb + adverb + complement constitutes three, two, or just one (complex) piece(s) of new information. Theoretically, there is also some justification for considering new entity reference separately from new verbs, to the extent that constraints can be identified which are specific to entity referents. As I have shown elsewhere (Du Bois 1980b:220 ff.), referential entities are treated by speakers as having continuous identity over time; hence new reference to non-identifiable entities involves opening a cognitive file for the referent, and references to given definite entities subsequently add information to update that file. Events, by contrast, are characteristically ephemeral and unique, so that successive verbs ordinarily do not refer back repeatedly to a single event. While new status is apparently the norm for verb tokens, given status is the norm for nominal reference (see below); thus speakers should attend to new nominals as more unusual than new verbs. It may be that speakers attend to new nominal information on a separate cognitive track, as it were, from new verbal information. For the present study, what matters is that my findings show that new nominal mentions follow a coherent and significant pattern. Whether my generalizations will ultimately need to be improved by being extended to encompass new verbal information remains an open question.

Is there a Preferred Argument Structure?

2. I now take up the discourse question that is foundational for this study. Among the various structural configurations of arguments which are grammatically possible in surface syntax, is there one which is statistically preferred in discourse? In this section I will try to shed light on this question through various text counts which use the corpus, categories, and methods described above.

In Sacapultec, as in other languages, the A and O argument positions of a transitive sentence may be filled by full NP's. This is especially common in elicited sentences. The following sentence illustrates what is called the 'basic word order', VOA:

(11) *ki-Ø-r-tix* *kinaq' l ačeŋ.*
INC-3.ABS-3sg.ERG-eat bean the man
'The man eats beans.'

Both the transitive argument positions are filled in surface syntax with full NP's: the O position with *kinaq'* 'beans', and the A position with *l ačeŋ* 'the man'. Speakers readily produce such two-lexical argument structures under elicitation conditions, where each sentence is produced in isolation. But the question remains whether this argument structure is typical of the way Sacapultec speakers talk in connected discourse. Despite the variety of surface configurations which are called acceptable under elicitation conditions—clauses with two, one, or zero overt lexical mentions in the various orderings—do Sacapultecs, when speaking fluently, actually produce each of these argument structures? Do they produce them with equal frequency, or with a

frequency that varies idiosyncratically and unpredictably, according to the expressive needs of the moment? I will attempt to show that, in connected discourse, some argument structures are preferred over others, and that this preference is highly consistent.

2.1. GRAMMAR. How often do speakers produce clauses with two (overt) lexical arguments? Figure 1 shows the percentage of clauses in the corpus (transitive and intransitive combined) which contain zero lexical arguments, vs. those containing one lexical argument, vs. those containing two lexical arguments.[13] Clauses with zero or one lexical argument are common, clauses with two lexical arguments are rare.

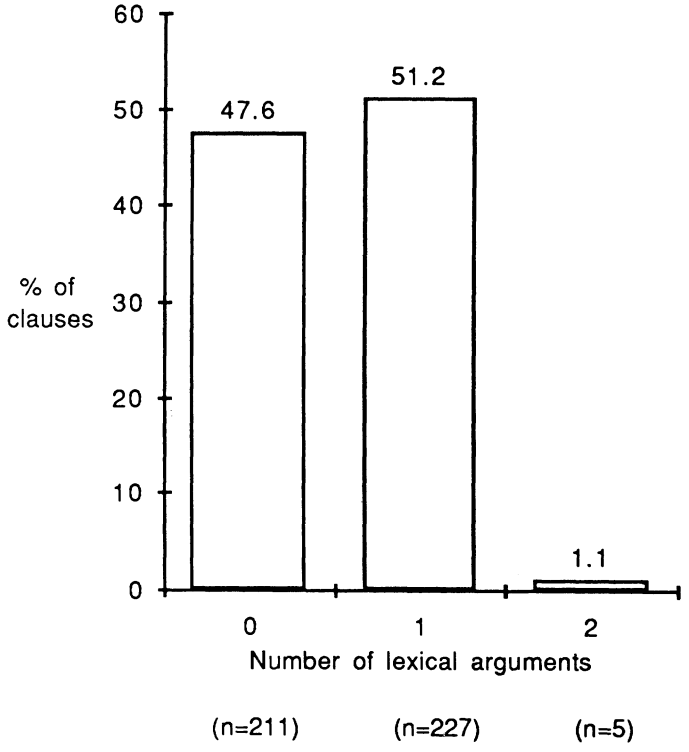

FIGURE 1. Frequency of clauses with zero, one, and two lexical arguments (transitive and intransitive clauses combined) (n = 443).

Of course, only transitive verbs can have more than one argument, so the question arises whether the observed rarity of clauses with two arguments

[13] See Table 1, below, for the counts on which Fig. 1 is based. Note that equational clauses from Table 1 are not included in Fig. 1 because of their small number. Excluded here are clauses which are indeterminate as to number of lexical arguments (clause fragments, broken off before completion) and false-start clauses (repaired in the next clause). Because the data which were indeterminate with respect to lexicality were not always the same as those which were indeterminate with respect to newness etc., there are slight discrepancies in the totals of mentions in the different tables. However, these slight differences in the viable sample were not large enough to affect the generalizations made.

realized lexically is a simple consequence of rarity of clauses with two argument positions, i.e. of transitive clauses. To answer this, Figure 2 (overleaf) presents again the percentages of clauses with zero, one, and two lexical arguments, but this time separately for intransitive and transitive clauses; cf. also Table 1. It is immediately clear that, even in a transitive clause, one or zero arguments are common, but the occurrence of two lexical arguments is rare: only 2.8% of transitive clauses show them.

	0 LEX ARG		1 LEX ARG		2 LEX ARG		TOTAL
	n	%	n	%	n	%	n
Transitive	84	46.9	90	50.3	5	2.8	179
Intransitive	127	48.1	137	51.9	———		264
Equational	0	0.0	13	100.0	———		13
TOTAL	211	46.3	240	52.6	5	1.1	456

TABLE 1. Transitivity and number of lexical arguments in clause.

Given that 44.2% of the mentions in the corpus (n = 868) are lexical, a random distribution of lexical mentions across the various clausal argument positions would lead us to expect a much higher frequency of transitive clauses with two lexical arguments than in fact occur (see discussion below). For the moment, we can formulate a preliminary constraint as follows:

(12) Avoid more than one lexical argument per clause.

This I call the One Lexical Argument Constraint. There are several points to make about this. First, it is not a categorical rule, but represents a tendency in the observed data. There is no absolute restriction in the grammar of Sacapultec that prevents speakers from producing clauses with two lexical arguments, as is shown by the elicited ex. 11 above—not to mention the five instances of clauses with two lexical arguments in the corpus. Neither is 12 best interpreted as a variable rule (in the sense familiar from Labovian sociolinguistics), since it is not clear that speakers are actually aiming for some particular frequency. This tendency exists in discourse, viewed as the aggregate of instances of language use. When individual instances of language use are summed together in sufficient number, they present to the linguist a set of regularities which are not recognizable in any single instance of language use, taken in isolation.[14] Since 12 constitutes simply a statement of an observed pattern, it remains to be seen whether it reflects directly a constraint on speech production, or is rather a consequence of something else.

Thus, in the majority of Sacapultec clauses, just one of the argument positions contains a full NP; i.e., some surface syntactic positions are full, while others are empty (or contain just a pronoun). This falls in the general class of constraints on QUANTITY—in this case, of lexical arguments—which brings us to

[14] Of course, a corpus (as such) of elicited sentences ordinarily fails to exhibit any interesting independent properties of its own, but simply mirrors the preoccupations of the analyst. A linguist who presents mostly transitive clauses with two lexical arguments in the source language, as elicitation models for translation, is likely to receive the same in return in the target language. For this reason the type of finding adduced in this paper is not accessible via traditional sentence elicitation methodology.

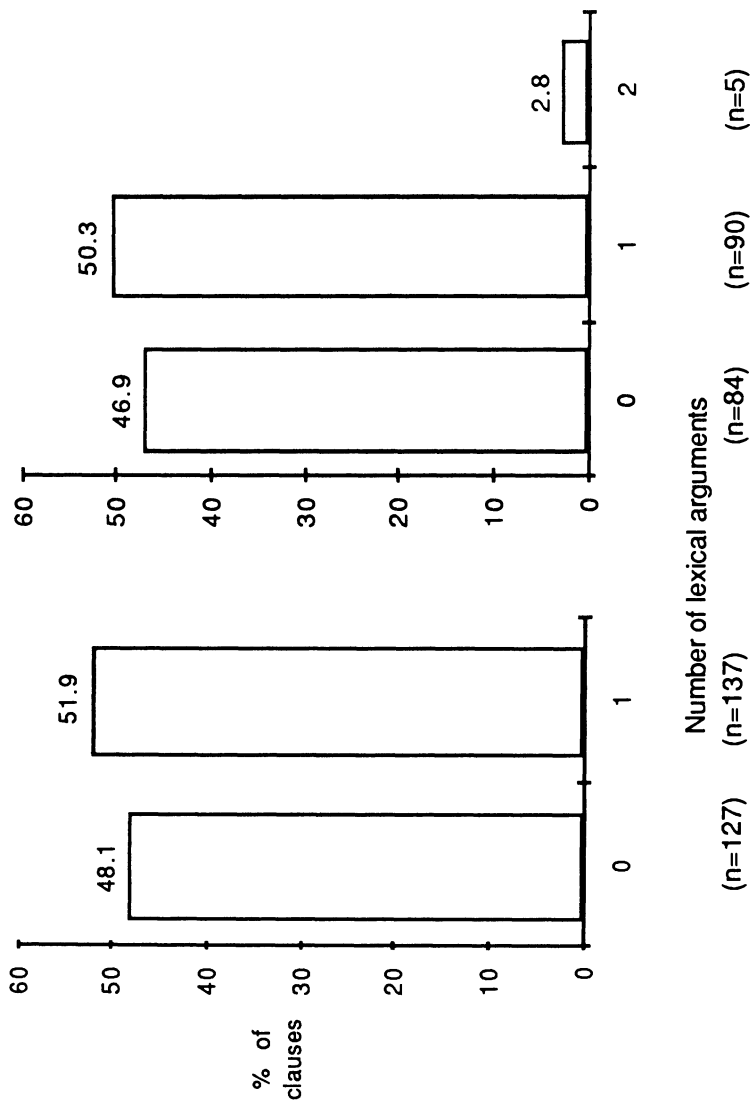

FIGURE 2. Frequency of clauses with zero, one, and two lexical arguments (intransitive vs. transitive clauses).

the related question of ROLE. Is the single lexical argument, allowed within the clause by the constraint in 12, randomly distributed across the roles A, S, and O? or is its distribution skewed in some way? In general terms: What is the distribution of (overt) lexical mentions among the structural positions of surface syntax?

Figure 3 shows that, in this corpus, a substantial portion of the total number of lexical arguments appear in the S or O roles, but a relatively small portion in the A role. (If we consider non-arguments, we find that numerous lexical mentions appear in obliques as well.) When a speaker has a referent that needs to be mentioned lexically, either the S or the O role (among argument positions) may be freely selected; but the A role is not freely employed for lexical mentions.

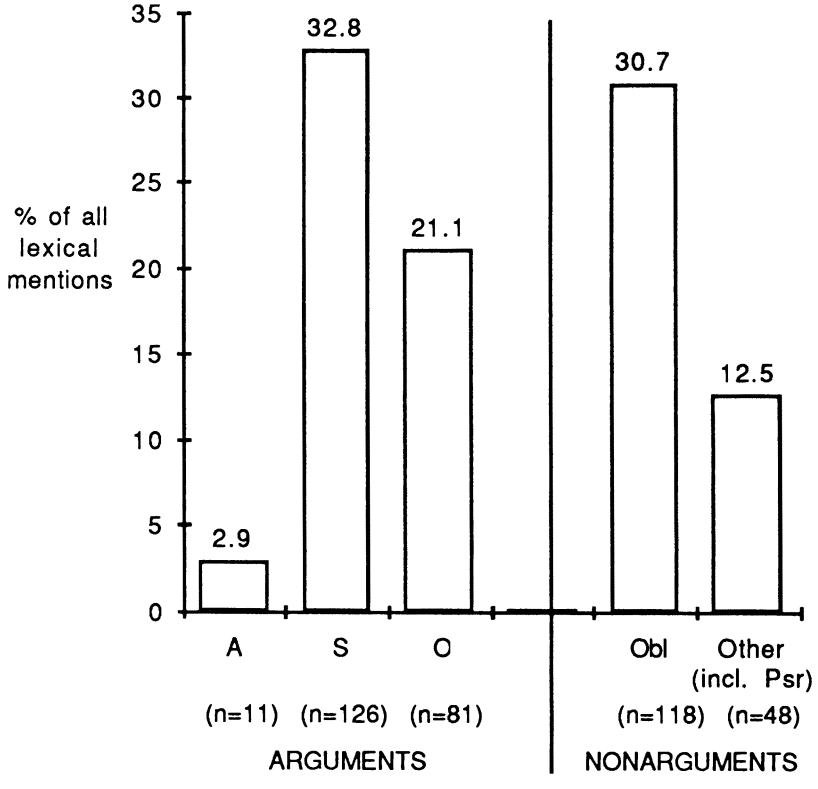

FIGURE 3. Where do lexical mentions go? Distribution of lexical mentions (n = 384) among grammatical roles.

The data in Fig. 3 do not rule out the possibility that the relative scarcity of lexical A's results from a scarcity of A's in general. However, if we compare the total number of mentions in the various argument roles (cf. Table 2), mentions of the A role are not at all rare: they occur about as often as O-role mentions (not surprisingly). The S-role mentions happen to be (in this particular corpus) somewhat more common than A or O. Now, we can compare the

number of lexical mentions in each argument role with the total number of mentions in that role (of whatever morphological type, including pronominal and affixal as well as lexical mentions). This is shown in Figure 4, which indicates for each argument position the proportion of mentions in that position which are lexical. Table 2 presents complete data on all morphological types and grammatical roles, including non-argument roles.

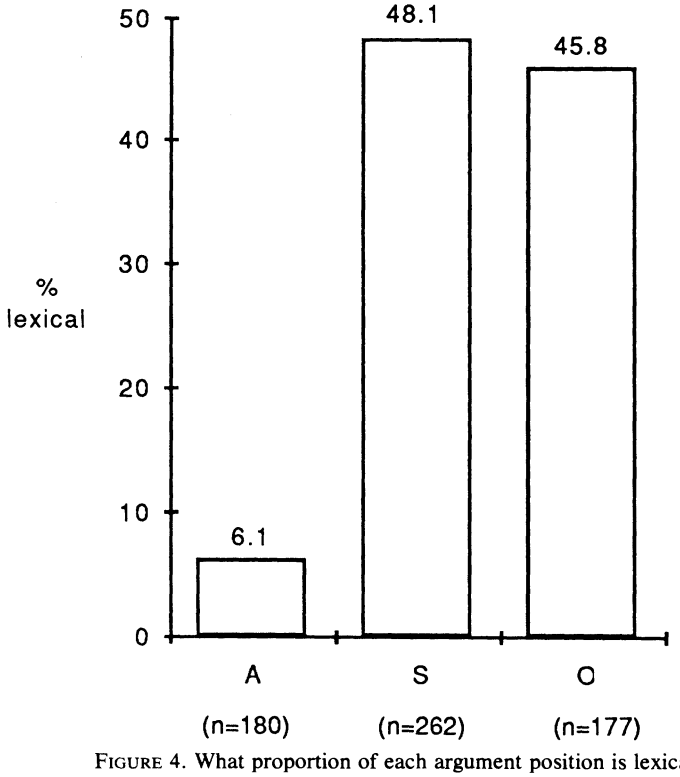

FIGURE 4. What proportion of each argument position is lexical?

	LEXICAL		PRONOMINAL		AFFIXAL		TOTAL
	n	%	n	%	n	%	n
A	11	6.1	13	7.2	156	86.7	180
S	126	48.1	12	4.6	124	47.3	262
O	81	45.8	2	1.1	94	53.1	177
OBL	118	84.9	2	1.4	19	13.7	139
PSR	12	16.9	4	5.6	55	77.5	71
OTHER	36	92.3	3	7.7	0	0.0	39
TOTAL	384	44.2	36	4.1	448	51.6	868

TABLE 2. Grammatical role and morphological type of mention.

While S and O each contain a substantial proportion of lexical mentions (about half), A contains a much smaller proportion of lexical mentions (6.1%). But 44.2% of all mentions are lexical (Table 2); hence, if full NP's were randomly distributed across grammatical positions, we should expect a much higher in-

cidence of them in A position—cf. Table 3. Similarly, from the perspective of a somewhat narrower grammatical domain, note that 35.2% of argument mentions (n = 619) are lexical; hence, if NP's were randomly distributed across just argument positions, we would still expect a much higher incidence of lexical A's—cf. Table 4.

	LEXICAL	NON-LEXICAL
A	11	169
NON-A	373	315

TABLE 3. Morphological type and grammatical role (all roles). (χ^2 = 133.83, d.f. = 1, $p < .001$)

	LEXICAL	NON-LEXICAL
A	11	169
S+O	207	232

TABLE 4. Morphological type and grammatical role (arguments only). (χ^2 = 94.25, d.f. = 1, $p < .001$)

Thus it appears that some factor exists which allows the free occurrence of lexical argument mentions in S and O roles, but which acts to limit (directly or indirectly) the occurrence of lexical mentions in the A role. For the present, we can formulate this as follows:

(13) Avoid lexical A's.

That is, avoid filling the A-role argument position with a lexical mention. I call this the Non-lexical A Constraint.

This means that there is a tendency in discourse to limit the quantity of lexical arguments in a clause to a maximum of one; and that this single argument is not distributed randomly across the grammatically possible positions, but systematically disfavors certain roles (13). The conjunction of the One Lexical Argument Constraint and the Non-lexical A Constraint, as it governs the surface syntactic distribution of lexical arguments in discourse, constitutes what I call P[referred] A[rgument] S[tructure]. (This is the grammatical dimension of PAS; a pragmatic dimension is addressed in the next section.) PAS constraints define the (maximal) surface syntactic configuration of arguments which is statistically preferred in clause tokens in discourse. It is important to stress that, though it is in discourse that this phenomenon is observable, no discourse structure as such is posited or implied. PAS is not a discourse structure, but a discourse preference for a syntactic structure (Du Bois 1985a:349).

It will be readily observed that PAS partitions the arguments along the same lines as the grammatical opposition of ergative vs. absolutive. From the perspective of the discourse distribution of grammatical types, S and O thus constitute a class which is set off as distinct from A. There is a natural unity in discourse to the absolutive syntactic category {S,O}: it is where full NP's may readily appear. The surface syntactic structure which is consistently preferred in discourse is a verb accompanied by a single (or no) lexical argument in the S or O role. This (maximal) preferred surface structure for the clause core can be represented schematically as:

(14) V $N_{\{S,O\}}$

Thus we can say that, for Sacapultec, discourse has ergative surface syntax.

This is exemplified in the following two clauses (spoken in succession by the same speaker as for 10):

(15) a. *š-e:-pe: e: išeb' al''ʔ-o:m,*
CMP-3pl.ABS-come PL three boy-PL
'Three boys came,'
b. . . . *š-Ø-a:-ki=-siky'-aʔ l pe:ra,*
CMP-3.ABS-MVT-3pl.ERG-pick.up-MVT the pear
'(they came) and picked up the pears,' [etc.]

In 15a, an intransitive verb is followed by a single lexical argument mention in the S role. In 15b, a transitive verb is followed by a single lexical argument mention in the O role. As the evidence given above shows, the pattern of verb plus absolutive argument exemplified in 15 is the preferred pattern for the overt occurrence of lexical arguments in discourse. In 15, the PAS constraints are met, in surface configurations that reach the maximum preferred level for the clause core. (Note that, since 14 represents a maximal preferred pattern, the one allowable NP may or may not be present; cf. 10d.)

It will doubtless occur to some that we could economize over the two-constraint formulation of PAS (quantity-and-role) by treating the avoidance of two-argument clauses as an artifact of the Non-lexical A Constraint. If the A position is prevented from containing a lexical mention, then only one possibility remains for a lexical argument in the transitive clause: the O position. Though this is initially appealing, it must be remembered that these are not categorical constraints to begin with; hence the apparently economical version is not in fact equivalent to the two non-categorical constraints. Further, there may be some basis for arguing that the quantity constraint is prior—by which analysis, the role constraint would be interpreted as a result of the interaction of this quantity constraint with certain additional discourse factors. For the present, it is best to keep both constraints before us as stated.

2.2. PRAGMATICS. Given a pattern of distribution of grammatical elements like that formulated in the previous section, the question arises: Why? Is this pattern due to an arbitrary constraint, or is there something about the way language is used that induces the surface grammatical pattern? As it turns out, the other side of the grammatical coin is pragmatic. In presenting the grammatical dimension of PAS above, I have shown that, in discourse, the different argument positions of a clause have distinct grammatical propensities, in the sense that different classes of surface grammatical elements will preferentially fill them. But differences between argument positions extend to the pragmatic dimension as well. Argument positions differ not only in their occupants' morphological type, but in their pragmatic (information flow) type as well.

Figure 5 shows what proportion of intransitive and transitive clauses contain zero new-argument mentions, one new-argument mention, or two new-argument mentions; cf. Table 5 (p. 826). Substantial numbers of clauses (whether intransitive or transitive) contain zero or one new-argument mention, with the former predominating. However, not a single clause contains two new-argument mentions. In this corpus, we find an apparent limit on the number of

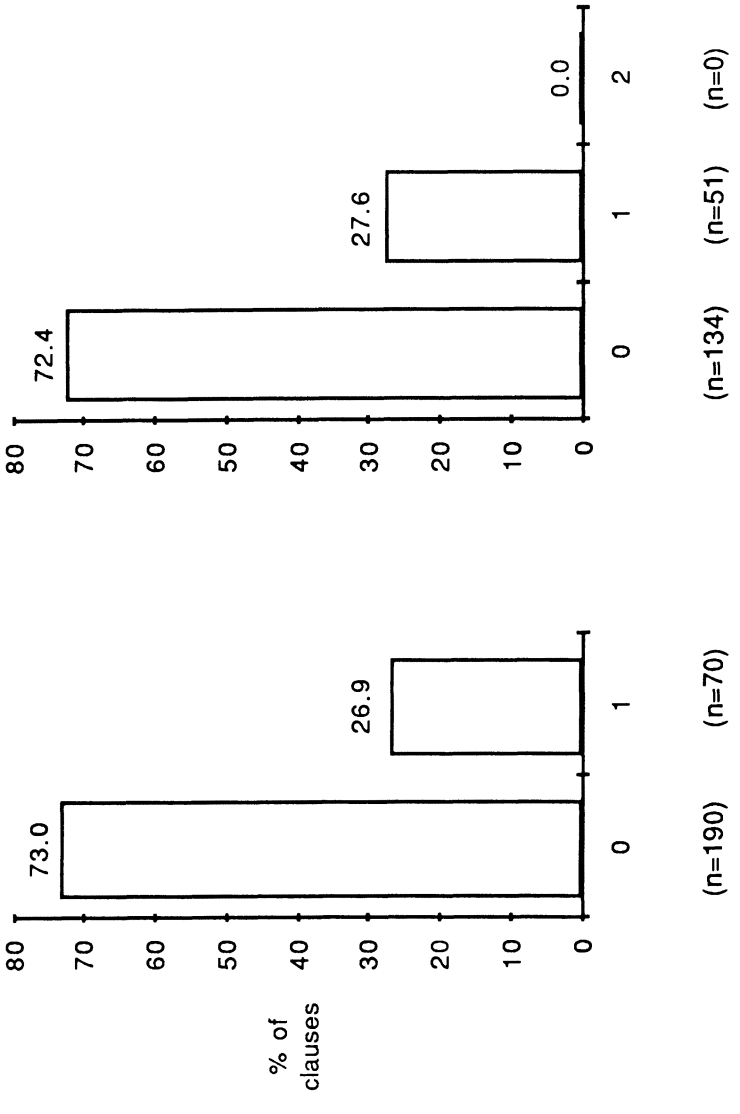

FIGURE 5. Frequency of clauses with zero, one, and two new arguments (intransitive vs. transitive clauses).

	0 NEW ARG		1 NEW ARG		2 NEW ARG		TOTAL
	n	%	n	%	n	%	n
Transitive	134	72.4	51	27.6	0	0.0	185
Intransitive	190	73.1	70	26.9	———		260
Equational	12	92.3	1	7.7	———		13
TOTAL	336	73.4	122	26.6	0	0.0	458

TABLE 5. Transitivity and number of new arguments in clause.

referents that can be introduced for the first time within the clause core—a quantity constraint parallel to that stated in 12, but now constituted in the domain of discourse pragmatics:

(16) Avoid more than one new argument per clause.

I will refer to this as the One New Argument Constraint. (Within the corpus, this quantity constraint appears as an absolute avoidance, which could thus be formulated as a categorical rule. While the categoricality issue is a question of considerable interest in its own right, it is not crucial to the present issue, as will become clear.)

Since 20.5% of all mentions are new (Table 6), a random distribution of new mentions across argument positions should give a small, but non-zero, number of clauses containing two new arguments. The lower than expected rate suggests the existence of some factor that limits, directly or indirectly, the quantity of new arguments.

	NEW		ACCESSIBLE		GIVEN		TOTAL
	n	%	n	%	n	%	n
A	6	3.2	1	0.5	180	96.3	187
S	58	22.5	13	5.0	187	72.5	258
O	42	24.7	17	10.0	111	65.3	170
OBL	55	38.7	22	15.5	65	45.7	142
PSR	3	4.2	2	2.8	66	93.0	71
OTHER	13	36.1	10	27.8	13	36.1	36
TOTAL	177	20.5	65	7.5	622	72.0	864

TABLE 6. Grammatical role and information status of mention.

Since speakers seem to introduce a maximum of one new referent per clause core, we can ask (as before) whether there is some pattern to where the introduction is made, in terms of syntactic roles. We find that, parallel to the constraint on the syntactic roles in which lexical arguments may appear, there is a constraint on the syntactic roles in which new mentions may readily appear. If we tabulate all instances of new mentions (of whatever morphological type) and examine their distribution by syntactic role, we find a marked skewing. Figure 6 shows the percentage of all new mentions which appear in each of the various syntactic roles. (To provide the broadest picture of the grammatical distribution of information flow, all surface syntactic role types are included in Figure 6; but for the reasons stated in §1.3, the non-arguments are separated from the arguments by a line, to mark their distinct grammatical status.) A relatively large portion of all the new mentions in argument positions occurs in the S and O roles, while only a small portion appears in the A role.

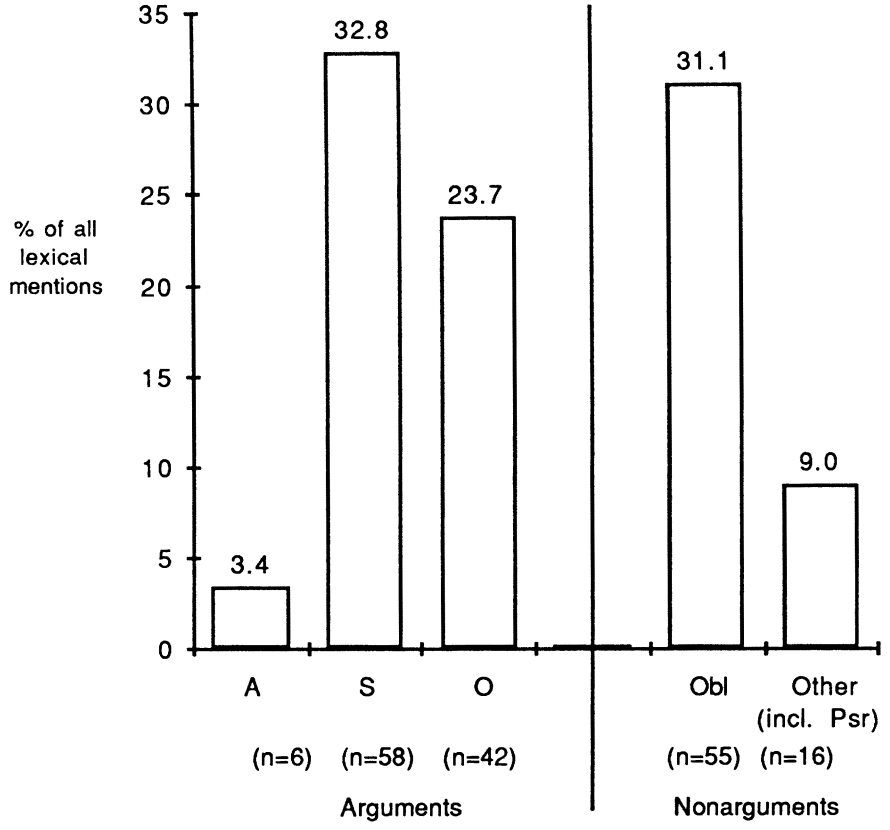

FIGURE 6. Where do new mentions go? Distribution of new mentions (n = 177) among grammatical roles.

Thus Fig. 6 makes it clear that a relatively small proportion of all new mentions appears in the A role; but what proportion of A role mentions is new, in comparison with S and O? Figure 7 (overleaf) shows the proportion of new mentions in each argument position. For S and O, a substantial proportion is new; but for A, the proportion of new mentions is very low, about 3.2%—cf. Tables 7–8 (overleaf). The fact that A is about seven times less likely to contain new information than S or O suggests the following role constraint on new information:

(16) Avoid new A's.

That is, avoid introducing a new referent in the A-role argument position. I call this the Given A Constraint (Du Bois 1985a:350).[15] (It might be termed more precisely the Non-new A Constraint; but since accessible mentions are few, and apparently intermediate between given and new, their ultimate position with respect to this constraint is still uncertain.)

[15] The important observation that new information is avoided in the A role was apparently first systematically made by Larsen 1981 for another Mayan language, Aguacatec. (Cf. Kalmar 1979, Sadock 1984:143–7.)

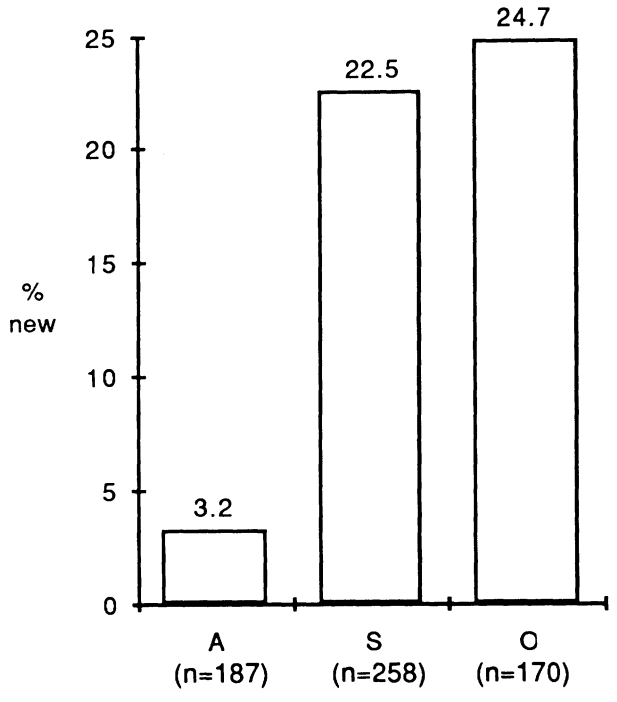

FIGURE 7. What proportion of each argument position is new?

	NEW	NON-NEW
A	6	181
S+O	100	328

TABLE 7. Information status and grammatical role (arguments only). (χ^2 = 37.06, d.f. = 1, $p < .001$)

	NEW	NON-NEW
A	6	181
NON-A	171	506

TABLE 8. Information status and grammatical role (all roles). (χ^2 = 43.74, d.f. = 1, $p < .001$)

This means that, in discourse, there is a maximum of one new referent per clause core; and this single new-argument mention typically appears in S or O roles, but not in A. The distribution of information flow across grammatical positions in discourse, like the distribution of morphological types, partitions the arguments A, S, and O along the lines of the grammatical opposition of ergative vs. absolutive. Parallel to the grammatical dimension established earlier, there exists a pragmatic dimension of PAS. Thus Sacapultec Maya displays in discourse an ergative/absolutive patterning of both surface grammar and

pragmatics (activation state). Table 9 summarizes the relation between the constraints and dimensions of Preferred Argument Structure.

	GRAMMAR	PRAGMATICS
QUANTITY	One Lexical Argument Constraint	One New Argument Constraint
ROLE	Non-lexical A Constraint	Given A Constraint

TABLE 9. Dimensions and constraints of Preferred Argument Structure.

INTERPRETING PREFERRED ARGUMENT STRUCTURE

3. Given the wide potential implications of ergative/absolutive patterning in discourse, it is important to consider why these patterns may have come into being. Here I will offer some interpretations of the facts presented above, in light of general considerations in discourse and grammar.

The appearance of lexical and new mentions in the S and O roles, but not A, is ultimately related to the role of topic continuty (Givón 1983b, Nichols 1985) in the construction of narrative discourse. It is widely recognized that human protagonists tend to be the central participants in most narrative discourse, and tend to be maintained as theme (roughly, topic) in successive clauses. As a result, they are very often definite and given. To the extent that human protagonists are likely to be agents in two-place predicates, it is likely that the A role will be filled by a given mention of a thematic human protagonist—for which a pronoun or cross-referencing affix, rather than a full NP, will suffice. In the O position, by contrast, we tend to find inanimate patient arguments in much greater variety. Each is likely to be relatively ephemeral in the discourse, rarely persisting through more than a few successive clauses. The steady sequence of shifting patient referents results in the O role being filled very frequently with new, lexical mentions. For the S role—which, as we have seen, also contains numerous occurrences of new and lexical mentions—the situation is somewhat more complex; this is taken up in §3.2 below. First, let us look more closely at the nature of the relation between the two dimensions of PAS.

3.1. RELATION BETWEEN GRAMMATICAL AND PRAGMATIC DIMENSIONS. What is the connection between the pragmatic dimension and the grammatical dimension of PAS? Various scholars have pointed out that use of NP's is closely related to the flow of information through discourse. Under a variety of conditions, full NP's are selected over pronouns, cross-referencing markers, and zeros (Clancy 1980, Givón 1983b, Fox 1984, Scancarelli 1985); but in the present context one reason stands out as central—a full NP is typically selected whenever the referent represents new information (Chafe 1976:31).

Obviously, then, the Non-lexical A Constraint and the Given A Constraint are not unrelated. Although other circumstances may lead to selection of full

NP's, there does tend to be a strong correlation, in extended discourse, between the pragmatic status NEW and the morphological status LEXICAL. I assume that a speaker in the process of planning a narrative verbalization will in general decide first on the content to be expressed, and then choose its verbalization. Thus we should expect that a speaker first decides that a referent must be treated as new, and subsequently makes the decision regarding morphological type. From this point of view, the Given A Constraint can be seen as the basis for the pattern codified as the Non-lexical A Constraint. The lexical phenomenon, then, would represent no independent constraint. Similarly, the quantity constraint in grammar bears some connection to the quantity constraint in pragmatics: if one never introduces two new arguments within one clause, one is less likely to need two lexical arguments within one clause. Again, the speaker's decision between the pragmatic statuses of given and new seems more fundamental than, and in some sense prior to, the decision between morphological expressions.

However, information status and morphological type are in fact partially independent. If a mention is new information, this typically entails that it will be realized with a full NP. But the converse is far from always true: often, a full NP is used to refer to a given referent (as comparison of Tables 2 and 4 suggests). This is especially common for inanimate referents, which are often mentioned lexically even just one or two clauses after a previous lexical mention. Thus the precise nature of the dependency between the various aspects of PAS must remain open for the present (cf. §3.4).

3.2. DISCOURSE FUNCTION OF INTRANSITIVES. It is perhaps not difficult to understand, from a discourse point of view, why A-role mentions (which often refer to thematic, agentive human protagonists) tend to be GIVEN; and, conversely, why O-role mentions (which often refer to ephemeral, inanimate patients) are often NEW. But it is not so clear why the S role should contain so many new mentions, since these often refer to members of the same semantic class as the A-role mentions: the human protagonists. The explanation for the argument structure patterning of S lies at least partly, I suggest, in the function of intransitive verbs in managing information flow.

We get some idea of the discourse function of intransitive clauses by considering where they occur along the line of development of the narrative. There are somewhat more intransitive clauses (about 60%) than transitive clauses (about 40%) in this corpus over-all. In one context, however, intransitive clauses are still more prevalent: when new human referents are introduced. When speakers have a human protagonist to introduce, it seems they frequently select the S role to do this (for full evidence and argumentation, see Du Bois 1987b). As we have seen, the S role does not impose restrictions on new information. Even if a protagonist is to figure in a narrative solely as a thematic agent of actions coded with highly transitive verbs, an immediate introduction in the A role would run into problems with the Given A Constraint. However, narrators know that they do not need to get everything said in the first clause; hence it becomes a simple matter to delay expression of the transitively coded

activities for the space of one clause, in order to make an introduction in the S role of an intransitive clause. The intransitive clause in question is often a semantically empty verb—e.g. *k'o:(l)-* 'there is', which is grammatically intransitive in Sacapultec, or a relatively neutral verb like 'come', 'arrive', 'appear'. Once the introduction of the protagonist, in new status, is out of the way, the referent can be treated as given, and subsequently referred to nonlexically; thus it is no longer subject to any constraint that might prevent it from filling the A role.

The discourse functioning of S, in relation to PAS in general, emerges most clearly if we run through a brief text example. For convenience, text sample 10 is partly repeated here:

b. . . *š-Ø-aq'an xun ačeŋ . . ču? če:?*
CMP-3.ABS-ascend a man atop tree
'a man climbed up a tree,'

c. . . . *š-Ø-a-r=-. . .-č'up-o? nik'yax pe:ra-s.*
CMP-3.ABS-MVT-3sg.ERG-. . .-pick-MVT some pear-PL
'he went and picked some pears.'

d. . . . *tik'ara? Ø-Ø-qa:x-u:l,*
then CMP-3.ABS-descend-hither
'then he came down,'

e. . . . *Ø-Ø-r-su? r-i:x xu:=n,*
CMP-3.ABS-3sg.ERG-wipe its-skin one
'he wiped one off,' [etc.]

Here the narrator introduces the (new) pear picker with a lexical mention in the S role of an intransitive verb, *-aq'an* 'ascend' (b), before placing the next reference to him (affixally realized) in the A role position of the transitive verb *-č'up* 'pick' (c). Unit b, with its new lexical mention in S role—and c and e, with their new lexical mentions in O role—conform to the quantity and role constraints of PAS, and exhibit the maximal preferred realization of the clause core, V $N_{\{S,O\}}$. (Regarding d, see below; regarding the oblique in b, see §3.3.)

In the same vein, a number of speakers introduce the pear picker with the semantically empty intransitive verb *k'o:(l)-* 'there is', before mentioning that he picks pears. Evidence from the corpus as a whole suggests that speakers indeed follow a general pattern of intransitive introduction followed by transitive narration (Du Bois 1987b). It appears, then, that speakers often select an intransitive verb, not necessarily for its conceptual content or semantic one-placeness, but for its compatibility with constraints on information flow.

Thus introduction of a new human may tend to entail use of an intransitive verb; however, we should by no means conclude that the reverse implication holds—that an intransitive verb is used only when a new human is to be introduced. If a previously introduced protagonist performs some activity most readily verbalized with a one-place predicate ('sleep', 'fall' etc.), the narrator is likely to use an intransitive verb, even if the S-role argument will be given. For example, in d the narrator verbalizes the pear picker's coming down from the tree with an intransitive verb, although he has been mentioned twice previously and thus represents given information: *tik'ara? Ø-Ø-qa:x-u:l* 'Then he came down.' Presumably this intransitive verb is selected for its apt lexicosemantic content, which happens to correspond to a one-place predicate. As

Tables 2 and 6 confirm, such given and affixal mentions in the S role are quite common. In sum, while speakers often shift to an intransitive verb in order to verbalize a new human in the S role, they do not particularly avoid intransitive verbs (or the S role) when their human protagonist is given.

3.3. OBLIQUES AND THE SCOPE OF THE QUANTITY CONSTRAINTS. In the preceding, I have generally treated obliques separately from core arguments—even though obliques pattern like two of the arguments, S and O, in several key dimensions. The free occurrence of full NP's (Fig. 3, Table 2) and of new mentions (Fig. 6, Table 6) characterizes not only S and O, but also obliques, and sets these three in contrast with A. It might seem, then, that the three together should be recognized as the significant class which is delimited by the discourse distribution of NP's and new mentions. Indeed, insofar as we wish to be aware of the actual distribution of all instances of full NP's and new mentions, we must recognize the very important role of obliques, and their affinity with S and O in this respect.

But it is necessary to recognize that we face two distinct issues here, if we are to properly assess the role of obliques in discourse. First, what factors shape the grammaticization of the system of grammatical relations? Second, what is the grammatical distribution of information flow, in the most general terms? The first of these questions must remain foremost for the present paper; hence it is necessary to attend to the boundary between argument and non-argument, between core and oblique (§1.3). Given the goal of understanding the alignment of grammatical relations, we cannot ignore the fact that some NP's bear direct relations to the verb, while others do not. Only the direct arguments are typically eligible for a tight structuring such as that exhibited in the Sacapultec cross-referencing system—which includes A, S, and O, but excludes obliques. In addition, obliques are often distinguished by certain semantic features. Their similarity to absolutives in new information frequency does not allow them to bridge their other differences, which appear to be substantial. To the extent that we inquire into the grammaticization of systems of grammatical relations, then, obliques must be recognized as set apart by independent factors of semantics and grammatical dependency.

Nevertheless, the obliques' correlation with new information and full NP's may provide an important clue, if we look beyond the issue of the grammaticization of ergativity. Specifically, obliques raise a question about the best statement of the scope of the quantity constraints. Up to now I have framed these constraints so that they apply, apparently, to the clause: I speak of one lexical argument, or one new argument, per clause. But of course the restriction to arguments means that these constraints cover only part of the clause, as indicated by the more precise term 'clause core'. They are silent regarding the mentions in the rest of the clause, i.e. principally obliques. The quantity and role constraints as formulated so far have nothing to say about what appears in oblique positions, one way or the other.

But given the right formulation, it may be possible—and perhaps desirable—to bring obliques and (core) arguments under a single generalization. Though

I cannot go into this issue in detail here, it may be possible to show that obliques can act as a sort of safety valve for extra information in the clause, given the strict limitations on information in the small set of available argument positions. If the scope of the quantity constraints were defined as the syntactic dependency group, rather than the clause as a whole (or clause core), this might produce a more general and significant formulation. Consider the hypothesis that each syntactic (lexical) head licenses one overt syntactic (lexical) dependent—or, in the pragmatic dimension, one new syntactic dependent. I will refer to this still tentative formulation as the Single Dependent Hypothesis. The restriction of lexical mentions (or new mentions) to one among the core arguments of a clause, PLUS one for each adpositional phrase within the clause (with no specific maximum on these) could thus be brought under the rubric of a single general statement. Moreover, we can recognize a possible discourse motivation for the use of adpositional phrases, beyond the local semantic ones which are readily recognizable. Adpositions may on occasion be selected because they invoke a new dependency group—and perhaps concomitantly, as I suggest, a new unit for purposes of information processing—which allows an additional item of new information to be introduced. (Evaluation of this hypothesis will require a systematic study of its own.)

3.4. ABSOLUTIVES: SIGNALING VS. ACCOMMODATING. Returning to the absolutive category, the question arises of what general function, if any, it has in discourse. In explicating the complex relationship of PAS to ergative/absolutive grammar, it is easy to be drawn into oversimplification and to say that the absolutive category in some sense (perhaps indirectly, or parasitically) 'marks' or 'signals' the information status NEW (Du Bois 1985a:355). But this clearly overstates the case. A Sacapultec speaker (or rather hearer) who assumes that A-mentions will be GIVEN (or non-lexical) will be right almost all the time—a potentially useful heuristic; but a speaker who assumes that absolutive mentions are NEW will come up wrong about three times out of four (Fig. 7). Even the assumption that absolutives are lexical would be wrong about half the time (Fig. 4). This predictive power does not remotely meet any reasonable standard for reliability of communication, given the importance of the statuses being communicated. Clearly, then, the relation between the absolutive grammatical category and the pragmatic status NEW must be something other than that of signaling or marking. What I will suggest below is that the relation is rather that of 'accommodating'. As we shall see, this depends on the observation of an asymmetry between new information and given information, in terms of how they are treated in the process of discourse production—in terms of how much effort is needed to accommodate them.

The discourse activity of introducing new referents, especially new human protagonist referents, appears to be a specialized and marked activity which monopolizes a speaker's verbalization capacities, to the extent that it can preclude certain other discourse production activities. Elsewhere (Du Bois 1980b:248 ff.) I have adduced evidence that speakers of English are able to either introduce new protagonists, or advance the story line of a narrative; but

they are not in general able to do both at once. The findings presented here for Sacapultec point to a similar phenomenon; they suggest that introducing a new-argument referent demands enough attention that, at least in unplanned spoken discourse, a simultaneous introduction of a second new referent within the same clause core is excessively burdensome.

The denotationist tendency in folk views of language function also finds its way into certain assumptions of linguists about function, especially those which often come to the surface in discourse-functional studies of grammar. Since we are not to accept that grammatical categories in language are arbitrary and autonomous, then they must in principle DO something. And if language is for denoting, then the conclusion is often drawn (if unconsciously) that what a given category does is, necessarily, to mark or signal something—as though denoting were all of linguistic function. But even if denotation were the sole end toward which speakers directed speech, there could well exist preparatory functions which were, of themselves, not yet specifically denotative. As I have shown, the absolutive position cannot be said to mark or signal new information (or any other information status), since in fact the majority of mentions in it are given. Nevertheless, it does bear a special relationship to new information, by allowing for the speaker's processing which is associated with this status. I propose that the absolutive syntactic position constitutes a sort of grammatically defined 'staging area'—reserved for accommodating the process, apparently relatively demanding, of activating a previously inactive entity concept. The absolutive does not mark new information, it accommodates it.

3.5. INFORMATION PRESSURE, GENRE, AND CONSTRAINTS. As shown by the frequency of clauses with no lexical arguments (Fig. 2; cf. 10d), the V $N_{\{S,O\}}$ schema represents a more or less maximal surface-syntactic structure for the clause core. This constraint on the quantity of lexical arguments in a clause represents only an UPPER limit; there seems to be no general constraint specifying a minimum number of lexical (or new) arguments in a clause. IF a full NP or a new mention appears in an argument position, then it will strongly tend to appear in either the S or O positions, but not in the A position.

In some circumstances, however, there may not be many NP's or new mentions at all, in any role. This is especially likely to occur under what I call 'low information pressure' conditions. This can be expressed in terms of an Information Pressure Quotient, which I define as the ratio of new humans (potential protagonists) to clauses. (An alternative measure would be the ratio of new entities of any kind to clauses, or to intonation units.) For the present corpus, there were 70 new mentions of humans in 458 clauses, for an Information Pressure Quotient of .153. (While at first blush it might not seem so, .153 actually is relatively high, representing introduction of a new human referent every six and a half clauses on average.) When a number of new protagonists are introduced within the space of a few clauses, the information pressure is higher than when fewer protagonists are introduced in the same number of clauses—or when the same number of protagonists are introduced in a longer

sequence of clauses. The issue of information pressure is especially important for appropriate identification of any quantity and role constraints that may be operating in a given language. Consider the analogy of trying to discover the size and shape of a pipe (or conduit, to coin a metaphor) with invisible walls, through which a visible liquid is flowing. If relatively little liquid flows through, the pipe will not fill; but if a relatively large amount of liquid flows through under higher pressure, the pipe will fill, and its outlines become discernible. Similarly, if a linguist examines only texts with low information pressure, few new or lexical mentions are likely in any role—whether A, S, O, or oblique. Presented with this kind of discourse data, it is difficult for the analyst to recognize the effects of any constraint which might differentiate one role from the next, as regards capacity for accommodating information flow. But in texts where information pressure begins to approach the allowable maximum, the differential effects of role constraints become immediately recognizable.

Thus, even assuming the validity of the proposed constraints which differentiate S and O roles on the one hand from A on the other, I would not predict—under conditions of low information pressure—that the A, S, and O positions would necessarily display significantly distinct levels of lexical or new mentions. Since the quantity and role constraints define only maximal possibilities, it is when the maximum is approached that the constraints will be most clearly in evidence. I predict, however, that as information pressure rises, S and O roles will begin to fill with lexical or new arguments—but the A role will not. Thus, in order to test the existence of the CONSTRAINTS which constitute PAS, it is necessary to see the system under maximum pressure.

Information pressure apparently correlates with discourse genre. In some genres, pressure is often high—such as 3rd person stories about strangers, as in the Pear Film narratives. In others, information pressure is often low—such as intimate conversation between family members or long friends, where interlocutors may refer to each other with 1st and 2nd person pronouns, and otherwise share large amounts of currently active background information. Especially when one looks at conversation, new issues arise, because of the much larger amount of background information that is typically shared between participants, and the concomitant rarity of new entity references; introductions of new human participants may be especially rare.

Clauses with no lexical arguments are, in this corpus, about as frequent as clauses with one lexical argument; but there is no particular reason to believe that this is a significant or general fact about discourse, or even narrative discourse, in Sacapultec. Rather, it is probably conditioned by the particular Information Pressure Quotient represented in the data. The present corpus happens to include a fair number of relatively short texts, into which the speakers have packed most of the main protagonists of the Pear Film. A different Sacapultec corpus containing longer film narratives, or other genres with lower information pressure, could be expected to show fewer clauses with one lexical argument, and more with zero lexical arguments.

The different grammatical roles appear to respond differently to changing

information pressure conditions. Thus A tends to be consistently low in new and lexical mention content (because of the role constraints), and O tends to be fairly consistently high (at least in lexical mention content); but S seems to be the most responsive to increasing or decreasing information pressure. As information pressure rises, intransitive verbs are more often invoked for carrying out the new protagonist introductions; this results in a higher frequency of new and lexical mentions in S. But when information pressure falls, so that fewer intransitive verbs are invoked just for the purpose of introducing new information, intransitive verbs are still selected for other reasons. From a discourse perspective, intransitives (and hence S's) are of two kinds: pragmatically motivated, selected for capacity to introduce new information, and semantically motivated, selected for their one-place lexico-semantic content. (See discussion in §3.2 above, and in Du Bois 1987b. This division is of course distinct from that based on the semantic feature of control or volitionality, as represented in so-called 'split S' marking.) Under very low information pressure conditions, the only kind of intransitive verb used will be the semantically motivated ones, which are likely to have given and non-lexical S's. Under these conditions, the frequency of new and lexical arguments in S can be as low as in A.

In sum, the proposed constraints on PAS are readily testable; but to do this appropriately, it is preferable to examine the type of discourse which is the most demanding, from the perspective of accommodation of new information. The absence of minimum constraints means that some discourse genres may well exhibit lower levels of lexical or new information in S position (or even O position), and hence result in more clauses with zero lexical or new arguments; however, I predict that there will be no unplanned spoken genres which contain higher levels of lexical or new information in A role. (The restriction to unplanned speaking excludes situations where the speaker has time to plan and edit in advance, as in memorized oratory, writing etc.—and possibly at the beginning of one's turn in conversation.)

Given these observations, it is important to keep issues of genre and information pressure in mind when comparing studies of information flow in different languages (§4.1). Sometimes what is thought to be a principled difference in argument structure between two languages turns out to reflect, rather, a difference in information pressure across two distinct text types—where the same type of divergence could be observed across the two text types within a single language. Given that genre (narrative vs. conversation, or even 1st vs. 3rd person narrative, etc.)—and concomitantly, information pressure—may affect the grammatical distribution of information flow in crucial ways, full-scale cross-linguistic inquiry will need to control for these factors, in order to effectively interpret comparisons between languages. It is worth emphasizing that, while conversation may well be the more frequent genre, narrative is especially likely to display conditions of relatively high information pressure; for this reason, it is especially valuable for effective testing of proposed quantity and role constraints. The heavy information pressure demands in narrative may well give it significance beyond what it otherwise would have for the adaptive shaping of grammar in response to discourse needs.

GENERALIZABILITY

4. In this section, I address the question of generalizability of the discourse patterns identified, and of the grammaticization forces which they seemingly induce.

4.1. IS PREFERRED ARGUMENT STRUCTURE UNIVERSAL? Given the potential implications of PAS for linguistic theory, we need to ask whether it is restricted to a specific language (e.g. Sacapultec), or to a typological class of languages (ergative languages, head-marking languages etc.), or whether it is found in a range of languages without respect to their typological class. If the ergative discourse pattern turns out to be limited to languages with ergative grammar, we might be led to conclude that it is an effect, rather than a cause, of the ergative grammatical pattern. But if the ergative/absolutive pattern of PAS is found even in languages which, for the most part, lack fixed grammatical structures organized along ergative/absolutive lines—in particular, if it occurs in accusative languages—then we may conclude that PAS is independent of the grammatical type realized in a particular language.

It is too early to give a definitive statement of the general distribution of PAS in the world's languages; however, early research has produced suggestive results. Since my first presentation of PAS for Sacapultec in 1981, studies of a variety of languages have been carried out.[16] Here I can only briefly summarize several of these interesting studies, which parallel portions of my study of Sacapultec narrative. As we saw in §3.5, differences of genre (especially narrative vs. conversation) potentially increase the problem of controlling for information pressure; hence the studies compared below focus (except as noted) on spoken narrative discourse.

For Mam, another Mayan language, England 1986 has provided evidence for the quantity and role constraints of PAS: only 1% of all clauses have two lexical arguments, while 3% have a lexical A; just 2% of new mentions (one instance) occur in A position. Of course, Mam is also an ergative language.[17] Outside Mayan, Craig 1987 has shown that in Rama, an accusative Chibchan language of Nicaragua, the PAS constraints hold: transitive clauses with two full NP's are rare, and 'new information (hence full NP's) is most likely to be introduced in the S or O position of a clause.'

Outside Central America, the same pattern is found. For Chamorro, an Austronesian language of the Mariana Islands, Scancarelli has shown (357), based

[16] A number of the studies were carried out by participants in my discourse proseminars at UCLA.

[17] In a study of narratives in Teco, a dying Mayan language very closely related to Mam, England 1986 indicates, based on a fairly small amount of data, that the One Lexical Argument Constraint and the Non-lexical A Constraint hold; but evidence is lacking for the Given A Constraint. She suggests that absence of new mentions in either A OR S roles may be due to processes of change accompanying language death. However, given that the observed incidence of new A's is BELOW the upper limit defined by PAS, it may be that more data (perhaps with a higher Information Pressure Quotient; cf. §3.5) will be needed to give a reliable test of the Given A Constraint. England in fact points out that analysis of more narratives is necessary to show that the data are not idiosyncratic.

on both spoken and written narrative data, that two-lexical argument clauses are rare (10% of transitives)—and that 'S's (and O's) but not A's tend to be referenced through full NP's'. For Malay, Hopper 1987b concludes, based on counts on a small sample of written narrative, that 'Malay is thus entirely similar to what Du Bois [1985a] has described for Sacapultec Maya: it has a "Preferred Argument Structure" ... in which lexical nouns, if any, are absolutives, and agents are reduced to clitics on initial verbs.' For Acehnese, an active Austronesian language of Sumatra, preliminary unpublished work by M. Durie suggests that PAS is applicable (with interesting twists based on the non-unitariness of S). Stewart 1984 presents evidence that PAS holds in Quechua. For Papago, a Uto-Aztecan language of Arizona, Payne 1987 shows (based on a corpus of 759 clauses, mostly folkloric narratives) that clauses with more than one lexical argument are rare (4%); in 93% of clauses, the one lexical argument is absolutive. Of new argument mentions (n = 97), 90% are introduced in the absolutive role.

For modern Hebrew, Smith 1987 shows that only 1% of transitive clauses (N = 260) have two full NP's, and just 8% of full NP's (N = 232) appear in A. New mentions (N = 161) appear rarely in A (4%), but they are common in S, O, and obliques. (And, as Smith points out, even the handful of 'new' A's were probably better analysed as 'accessible'.) For English, based on preliminary analyses by myself and by Iwasaki 1985,[18] the quantity and role constraints on lexical and new arguments clearly hold. In German, Schuetze-Coburn 1987 shows that even verbs which can potentially take three arguments (e.g. ditransitives) tend strongly, in spoken discourse, to follow the quantity and role constraints of PAS. Evidence pointing to PAS has also been provided by Dutra 1987 for spoken Brazilian Portuguese, and by Lambrecht 1987 for French.[19]

For Japanese, Downing (1985:12) shows that 'the transitive subject slot, by comparison to the direct object and intransitive subject slots, i.e. the absolutive NP slots, is disfavored as a site for the introduction of new referents into a text.' Of all introductory mentions in twelve Pear Film narratives, just 5% were in A role, confirming the Given A Constraint.[20]

[18] I thank Janine Scancarelli for help with some of the preliminary English text counts. I am currently carrying out a more in-depth study of information transfer phenomena in English (including PAS and related issues), with support from the National Science Foundation.

[19] In the studies of Mam, Teco, Rama, Quechua, Papago, Malay, Acehnese, and French, no Pear Film data were used. In the studies of Chamorro and Hebrew, the Pear Film was supplemented with other narrative data. For English, some of the studies have used Pear Film data (Iwasaki 1985; Scancarelli and myself); others, e.g. (Lee 1984), have used other sources of data, with comparable results. It is clear that this phenomenon is not an artifact of the experimental procedure. Of course, differences in genre (narrative vs. conversation, or even 1st vs. 3rd person narrative), with resulting differences in information pressure, may affect information flow patterns in crucial ways (cf. §3.5); in a full-scale inquiry, these factors will have to be controlled when making and interpreting comparisons between languages.

[20] Based also on the Pear Film data, Iwasaki 1985 claims that, in Japanese, the Given A Constraint does not apply as strictly as in Sacapultec or English; he points to several special aspects of Japanese grammar that may account for this. However, fully 9 of the 15 apparent violations in the data occur

English, German, Portuguese, French, Hebrew, Quechua, Rama, Papago, and Japanese are all clearly accusative in grammar; nevertheless, in spoken discourse, they display an ergative/absolutive pattern of information flow. Although the number of languages fully investigated is too small to allow us to draw definitive conclusions (as is the text data sample from some of the languages), the tendency exhibited in the findings to date is striking: of the languages for which investigations of quantity and role constraints in spoken narrative discourse have been carried out, the overwhelming majority appear to exhibit PAS.

The potential theoretical consequences are considerable. The fact that accusative languages display ergative/absolutive patterning allows us to reject the possibility that PAS is merely an effect of ergative structure. The evidence that PAS is independent of the grammatical type of a language suggests that it merits the theoretically significant status of a structure-independent motivation for a grammatical structure.

4.2. WHY ARE NOT ALL LANGUAGES ERGATIVE? PAS constitutes a robust pattern in discourse, independent of the actually realized grammatical type. As such, it powerfully motivates one particular grammatical type—the ergative. But this raises the point: Why are not all languages ergative? One might be inclined to dismiss such a question as impertinent—but clearly, we are not permitted to avoid it, given the form of the present argument that a fundamental discourse pattern motivates ergative grammar.

The answer, in general terms, is that several functional motivations compete to control the structuring of the single system of grammatical relations (Du Bois 1985a). Counterbalancing the factors that link S with O are a set of important—and, in fact, long-recognized—factors that link S with A. It is a familiar observation that mentions appearing in the {S,A} category are typically human, agentive, and topical.[21] (Of course these features often cluster with each other, independently of the grammatical role in which they are realized.) A number of linguists have argued that TOPIC, or the (proto)typical correlation of agent and topic, is the basis for grammaticizing the category of subject, in languages which have this category (cf. Chafe 1976, Li & Thompson 1976, Dixon 1979:126–7, Comrie 1981, Sasse 1982). If the typical {S,A} correlations really are type-independent—if they are found in ergative as well as accusative languages—then they must be recognized as a competing motivation in discourse which could weigh against the effective influence of PAS.

---

in the first mention of one particular referent, the pear picker—who appears at the very beginning of the film. Some caution is needed in interpreting the findings, given the apparent existence of an 'initialization effect', whereby speakers show some tendency to treat new information as given (or even definite) when they are just beginning to tell a story (cf. Du Bois 1980b:253 ff. on premature introduction). In contrast, Downing's study of Pear Film narratives, which treats all animacy types together, suggests that the Given A constraint in fact holds for Japanese.

[21] Another feature typically cited in this list of subject-associated properties is definiteness (or givenness). But since such statements about subjects almost invariably fail to distinguish consistently between A and S, the claim requires further investigation.

From time to time, however, it has been maintained in the linguistic literature that, in contrast to accusative languages—which treat the subject {S,A} as topical, in familiar fashion—ergative languages treat the absolutive category {S,O} as topical (Plank 1979:15 ff., Mallinson & Blake 1982:109, Verhaar 1983; but see Larsen 1981:145). Sometimes it is explicitly claimed that, in transitive clauses, the patient (or the O), realized absolutively, is topical—even in the sense of what the sentence is about—for speakers of an ergative language (Mallinson & Blake, 114). This kind of claim about topicality in ergative languages is usually advanced in an effort to equate the unmarked category (which in ergative languages is the absolutive) with the category of topic, or subject, or both.

However, when one actually examines the evidence presented by connected discourse in an ergative language like Sacapultec, the picture which emerges of the grammatical alignment of topicality is rather less exotic than what has been attributed to speakers of such languages. A hint of this alignment in the present corpus can be found in the grammatical distribution of mentions of human referents—which, in these texts, are far more topically continuous (Givón 1983b) than the inanimates, in the sense of being maintained over a series of successive clauses. Figure 8 presents the distribution of all mentions

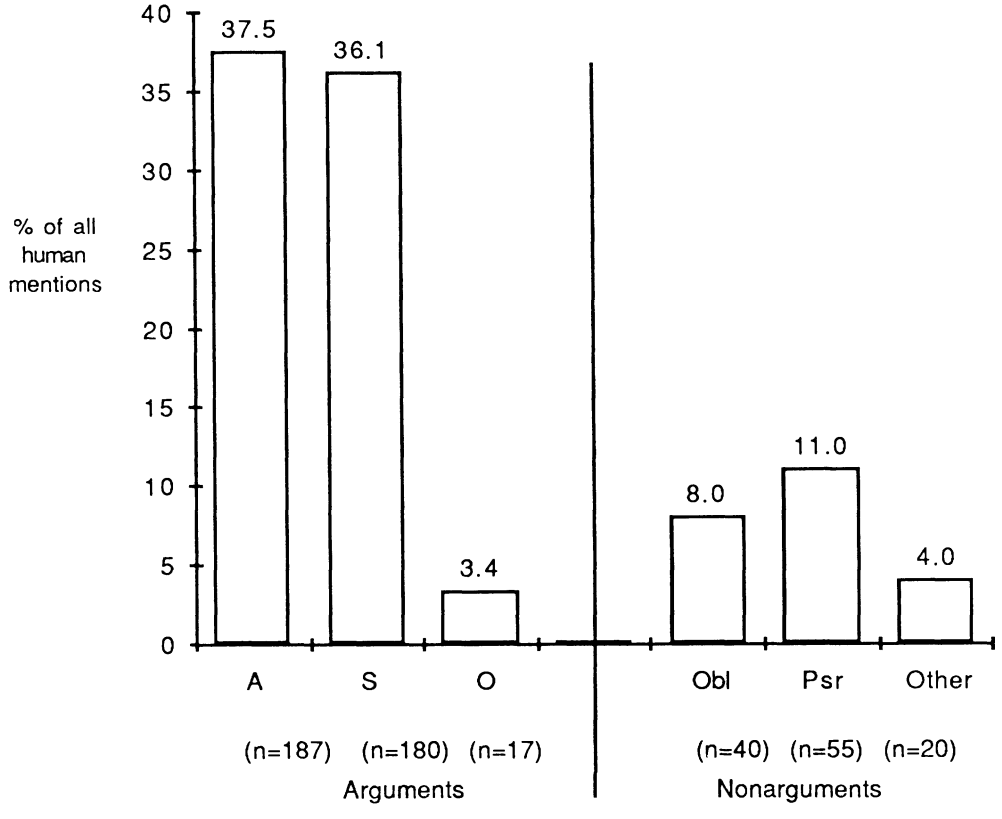

FIGURE 8. Where do human mentions go? Distribution of human mentions (n = 499) among grammatical roles.

of human referents across the various grammatical roles; cf. also Table 10. The great majority of human-referent mentions appears in argument positions; and within this grammatical domain the overwhelmingly preferred roles are S or A, but not O.

	HUMAN		INANIMATE		TOTAL
	n	%	n	%	n
A	187	100.0	0	0.0	187
S	180	69.8	78	30.2	258
O	17	10.0	153	90.0	170
OBL	40	28.2	102	71.8	142
PSR	55	77.5	16	22.5	71
OTHER	20	55.6	16	44.4	36
TOTAL	499	57.8	365	42.2	864

TABLE 10. Grammatical role and animacy (inherent semantic class) of mention.

Figure 9 shows, for each argument position, what proportion of mentions are human. All 187 of the A-role mentions are human—suggesting that, in Sacapultec, the association of humanness with the A role is categorical (an association effectively maintained by lexical conspiracy, I would argue). In the S role, a substantial majority of mentions are of human referents (69.8%). But in the O role, far less than half the mentions are of human referents (10%). Again, these figures are at least suggestive of a factor linking S with A, rather than O. The set {S,A} represents the preferred position for human mentions, as seen in Tables 11–12 (overleaf).

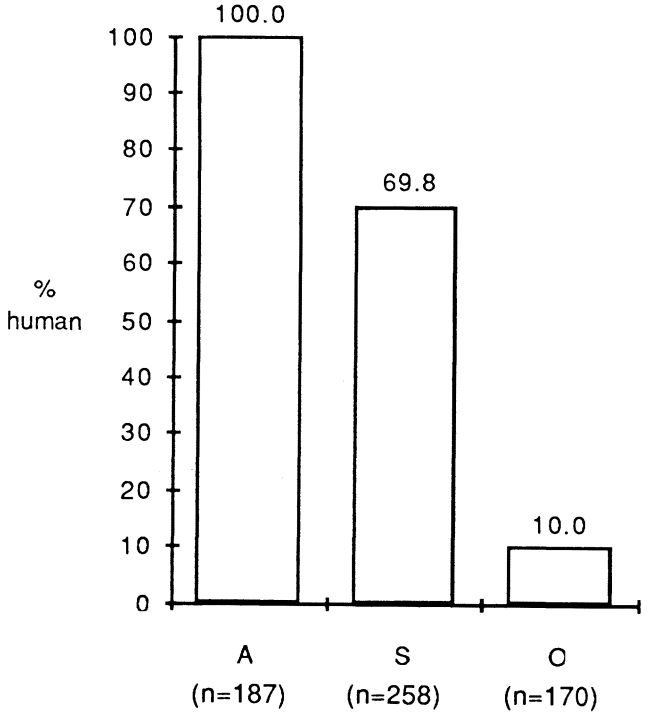

FIGURE 9. What proportion of each argument position is human?

	HUMAN	INANIMATE
S+A	367	78
O	17	153

TABLE 11. Animacy and grammatical role (arguments only). (χ^2 = 275.47, d.f. = 1, $p < .001$)

	HUMAN	INANIMATE
S+A	367	78
ALL OTHER	132	287

TABLE 12. Animacy and grammatical role (all roles). (χ^2 = 229.77, d.f. = 1, $p < .001$)

But data on preferential distribution of references to humans can only be suggestive of distribution of topic continuity. A more direct measure must display actual continuity in successive clauses. Since we are specifically interested in how the system of grammatical relations is structured, we must examine topic continuity in relation to particular grammatical roles. As noted in §1.1 above, it is the alignment of S which is pivotal. A link between S and A motivates nominative alignment, while one between S and O motivates absolutive alignment. Does S pattern more like A or like O, then, with respect to topic continuity? To explore this, I measure the topic continuity which is associated with the relevant pairings of syntactic roles (cf. Dixon 1972:71–81, 130, 139; Silverstein 1976:154–6). Anaphoric links across successive (adjacent) clauses are tabulated according to the syntactic roles in which the coreferential mentions occur in the two clauses. The results are given for links between S and a non-identical argument role—i.e. between S and A, or S and O (but not between S and S).[22] For example, if a mention of a referent R appears in the A role of the *n*th clause in a text, and the next mention of the same referent appears in the S role of the succeeding $(n+1)$ clause, then this instance of an anaphoric link across the roles A and S is tabulated in the linkage class labeled S = A. Similarly, if the next mention of referent R (in the $n+2$ clause) appears in the O role, this instance of an anaphoric link across the roles S and O is tabulated in the class labeled S = O. Likewise, a link between the same roles but in the opposite sequence, i.e. from O to S, would be tabulated in the same (S = O) class. Figure 10 shows the frequencies of non-identical links between S and another argument (i.e. for these two linkage classes). The S = A links clearly outstrip the S = O links. We can conclude that, in Sacapultec discourse, the factor of topic continuity links S with A more than with O: continuity of reference across the S and A roles strongly outweighs such continuity across the S and O roles.

[22] Links which do not preferentially motivate one grammatical relational type over another are disregarded for the present. For example, there are many links in discourse of the type A = A: an A mention in one clause is coreferential with an A mention in the next. But since any system of grammatical relations is likely to treat A self-identically (i.e. treat one instance like the next), this identical link type does not skew the discourse pressure toward any specific system, e.g. ergative in preference to accusative. Similarly, O is treated self-identically. For the S category, given the doubts that have been raised about its unity (cf. Dutra), the situation is more complicated. To the extent that we probe more deeply and distinguish subtypes within S, new implications will probably emerge regarding discourse pressures for grammatical alignment (these will be especially noticeable in active languages); but this goes beyond the scope of this paper.

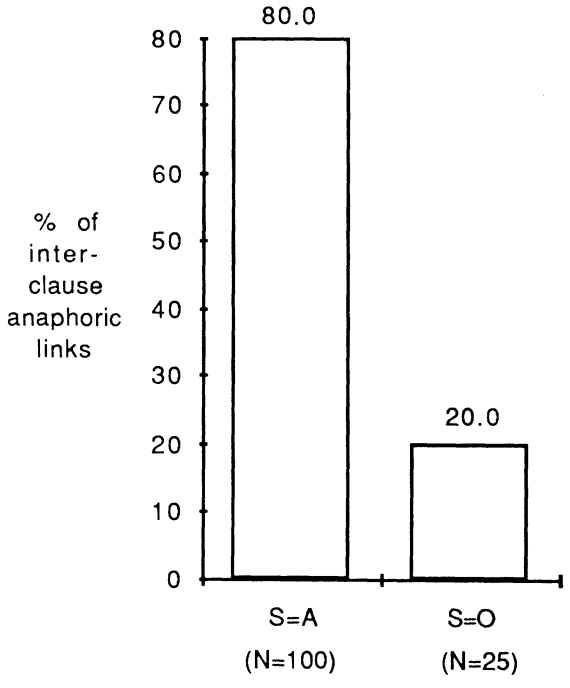

FIGURE 10. Topic continuity and grammatical role: Interclause referential anaphora by syntactic role pairings involving S.

It is important to stress that, even in a clearly ergative/absolutive language, the topic continuity dimension can be shown to define a nominative/accusative {S,A} alignment. In effect, the solidly ergative Sacapultec language displays a submerged pressure toward nominative/accusative patterning. In languages which actually realize an accusative grammatical structure, it is evidently this pressure—in conjunction with additional, converging pressures that support the same alignment—which has won out over the competing pressure to ergativity. At the same time, there must exist a latent pressure to ergativity in accusative languages, to the extent that accusative languages also exhibit PAS.

4.3. COMPETING MOTIVATIONS AND SPLIT ERGATIVITY. Lest this sound too conveniently Panglossian (in the terms of Haiman 1985:5), it should be emphasized that claims of such competing motivations are testable (Du Bois 1985a:355–6). The main basis for such testing is the consistency which grammatically 'split' phenomena exhibit across the languages of the world. Of these, the best known representative is split ergativity, because of the work of Silverstein 1976, 1980, 1981 and the interpretations which it has inspired.

Most interpretations of Silverstein's studies focus on a scale of NP types presented under such labels as the 'potentiality of agency scale', where types toward the left end of the scale are said to be more likely to function as transitive agent (Dixon 1979:85; cf. Silverstein 1976:113, 122–3; see comments on Silverstein's original, more complex, theory in §5.2). The scale distinguishes NP

types along such dimensions as person, animacy, pronoun/noun, and proper/common (Dixon, 1979:85):

				Demonstratives		
				Human	Animate	Inanimate
1st person pronoun	2nd person pronoun	3rd person pronoun	Proper nouns	Common nouns		

In languages with split ergativity (i.e. with both ergative and accusative alignments, manifested in different domains of grammar) based on NP type, ergative marking is said to be associated with lower agency potential (right end of the scale), while accusative marking is said to be associated with higher agency potential (left end of the scale; Dixon 1979:86–7). Silverstein suggests that ergativity splits can be understood partly in terms of 'the semantic naturalness for a lexically specified noun phrase to function as agent of a true transitive verb, and inversely the naturalness of functioning as patient of such' (1976:113; but see Silverstein 1981:229, fn. 5)—in conjunction with other critical factors. (Note that, for Silverstein, 'naturalness' here is the inverse of 'markedness', the contrast between which is reflected in 'asymmetries of expression of semantic-grammatical value'; 1981:230, fn. 5.)

In contrast to semantically oriented 'agency potential' interpretations, my findings on the pragmatic correlates of grammatical role lead me to interpret the splits in terms of the association of varying information pressures with the distinct grammatical/semantic/pragmatic categories of NP's. Consider Dyirbal, which provides a well-known example of a characteristic type of split: it has nominative/accusative alignment in 1st and 2nd person pronouns (cf. unmarked nominative ∅), but ergative/absolutive alignment in 3rd person pronouns, proper names, and common nouns (cf. unmarked absolutive ∅; Dixon 1979:87—but see his fn. 35). Since 1st and 2nd person pronouns are always GIVEN, there is no contrast between given and new mentions in this domain (nor, in general, between lexical and non-lexical). If the aggregate of 1st and 2nd person tokens does not exhibit variation in information status, then no skewing can be differentially linked to any particular grammatical role (e.g. S/O rather than A).[23] In this well-defined grammatical domain, information pressure is absent, and no distinctively skewed given/new contrast can arise.

Until appropriate discourse studies are carried out for a number of split ergative languages like Dyribal, any interpretations can only be considered suggestive of hypotheses for future testing. In light of my findings, however, the feature which unites the various NP types that have been shown to exhibit accusative tendencies cross-linguistically seems likely to be a correlation with consistently low information pressure. I submit that this characterizes the scale presented above (or, more importantly, the facts of language typology which it seeks to represent) more effectively than any reference to 'agency potential'. As long as the aggregate of discourse tokens displays a viable contrast between new mentions and given mentions, the potential exists for a skewed association

[23] Dixon points out (1979:87, fn. 35) that proper names, at least in Dyirbal, show a pattern that ought to place them next to 1st/2nd person pronouns—higher on the scale than 3rd person pronouns. Of course proper names, like 1st/2nd person pronouns, tend to be consistently given.

of new (or of given) with a particular grammatical role or feature. But for NP types which are consistently GIVEN, information pressure collapses—and, along with it, a major part of the discourse motivation for contrast of absolutive and ergative categories. In the absence of information pressure, there is no need for a grammatically demarcated 'staging area' (§3.4), reserved for the task of activating new information. Since given information is so much more common than new (in the domain of entity reference), complete absence of given mentions from a grammatical or lexical category is unlikely; but a relatively consistent absence of new mentions from a category is a realistic possibility. As for lexical/semantic types like those represented in proper names, kin terms, and true personal (1st and 2nd person) pronouns, their inherently indexical nature (Silverstein 1976, 1981) makes identifiable status the norm; and such mentions are overwhelmingly GIVEN in typical use. Information pressure varies not only between texts representing different genres (§3.5), but between different lexical/grammatical types within a single text. My hypothesis of the discourse basis of ergativity suggests that the splits involving accusative alignment in personal pronouns, demonstratives, proper names, kin terms etc. are based on their relatively high propensities for a consistently given information status, rather than on a lexical 'agency potential'. No doubt a lexical propensity for A-role status contributes indirectly to givenness; but it is the resulting collapse of information pressure (in the aggregate of tokens), rather than the immediate effect of intrinsic semantic/grammatical markedness (within the domain of types), that actually undermines the ergative/absolutive discourse pressure in the relevant domains.

As I have already shown (§4.2), the discourse pressure of topic continuity is independently present even in ergative languages. This pressure stands ready to foster accusative alignments, wherever competition from the given/new-based pressure weakens. My hypothesis of two independent motivations, potentially operating simultaneously, is supported by the fact that accusative and ergative marking can actually overlap in the middle of the scale (Silverstein 1976:123 ff., Dixon 1979:87).[24]

Thus 'split' grammar corresponds to 'split' discourse. Non-monolithic discourse gives rise to non-monolithic grammar. Competing motivations become more than ad-hoc exegetical conveniences when it becomes possible to predict (on a theoretically justified basis), for each of the various linguistic domains, the relative effectiveness of each postulated motivation. Their validity is con-

[24] I cannot yet provide a conclusive discourse interpretation of the ergativity splits along aspectual lines; it may turn out that this split type is more fertile ground for explanations on semantic or (type-)pragmatic bases (e.g. Regamey 1954, DeLancey 1981). But intriguing discourse implications are generated by Hopper's observation (1979b:216) that, in narrative discourse, background clauses (which are often imperfective) tend to have frequent changes of subjects—but foreground clauses (which are often perfective) tend to maintain a single, topically continuous subject over a sequence of several clauses within an episode. If this discourse characterization of aspects turns out to be correct, the difference in topic continuity could lead to a difference in the degree of given/new skewing in the two types of aspects; this in turn could have significant effects on the relative force of the pressures motivating ergative and accusative alignment. This bears further investigation.

firmed when the grammatical phenomenon attested in a given linguistic domain turns out to agree with the functional motivating force which is demonstrably strongest in that domain. In arguing that accusative alignment in otherwise ergative languages arises precisely in those linguistic domains where information pressure has collapsed (so that no reserved staging area for new information activation is required), I present just such a case for competing motivations as an explanation for systematic splits in variable grammatical structure.

RELATION TO PREVIOUS RESEARCH

5. Here I address the significance of my discourse findings in relation to previous interpretations of information flow and ergativity.

5.1. INFORMATION FLOW. It is first necessary to place my findings within the context of current research on information flow in discourse, and to bring out what is new in their implications. An important emerging direction in current discourse research is the focus on the rate of transfer of information in spontaneous spoken discourse, i.e. the amount of information transferred per unit. Some discourse researchers have tried to identify limitations on the amount of speech (of any information status) which is formulated at one time. For example, Pawley & Syder propose a 'one clause at a time' constraint (1977, 1983:564–5); this basically suggests that, in spoken communication, humans can formulate only the contents of one clause unit at a time. Other researchers have retained this interest in the scope of the basic unit for information flow in spoken discourse, but additionally have tried to specify the differential applicability of constraints to particular KINDS of information within the information transfer unit. The underlying assumption is that the various information statuses, such as given and new, are not simply two alternative statuses of equal importance. Rather, constraints on information flow typically single out NEW information. For example, several key proposals make reference to the maximum amount of new information within a unit; the amount of given information, by contrast, has not been shown (at least by current discourse research) to be limited, or even monitored, to the same degree. New (previously inactive) information appears to be more difficult to process, and hence most subject to constraint: it is information which requires special cognitive effort to bring it into an activated state (Chafe 1987; cf. also Du Bois 1980b:248 ff., Givón et al. 1985). Because of this, it is of great importance to monitor not simply the total amount of information being transferred within the scope of a given unit, but also the concept activation state (information status) for each item of information.

This is reflected in the special attention which several discourse researchers have given to information in the new (previously inactive) concept activation state. As early as 1975, Givón suggested that speakers of several Bantu languages follow a strategy of restricting new information to one 'bit' of new information per proposition or VP (cf. also Givón 1979:52, fn. 25). In my own research (Du Bois 1981a, 1985a) I have identified similar constraints on new information quantity in Sacapultec. Chafe 1987 proposes a 'one recall at a time'

constraint—where 'at a time' means 'within one intonation unit', and 'recall' refers to the changing of a concept from the inactive to the active state. Thus only one previously inactive concept can be activated within a single intonation unit. Chafe hypothesizes that the cognitive basis of this limit on new information is that the intonation unit represents a single 'focus of consciousness'. (Even Pawley & Syder distinguish material in a clause which is formulaic or ready-made, said not to be subject to the 'one clause at a time' constraint, vs. material in a clause which must be formulated afresh, which is subject to the constraint.) Thus a small but influential group of discourse researchers has given close attention to the existence of constraints on information flow in spoken communication, attempting to identify the basic unit of information flow and the limitations on the amount of certain kinds of information which can be included in it.

Parallel to statements on information quantity, the literature has contained occasional observations relevant to lexical quantity, as exemplified in the apparent tendency to limit 'NP density' in some languages (Munro & Gordon 1982:109–13), or to maintain a roughly one-to-one ratio of verbs to nouns—at least in the 'pragmatic' mode said to characterize simplified speech varieties such as pidgins (Givón 1979:223).

But while the issue of information QUANTITY has received some attention, that of information ROLE has often been overlooked. Of course, numerous statements have linked definiteness with subjects; and there is evidence that indefinite NP's (in written English) are far more common in object position than in subject position (Givón 1979:52).[25] But since the term 'subject' glosses over the differences between S and A, investigations structured in terms of it cannot provide an independent assessment of the alignment of S. One case where S and A are effectively distinguished in a statement of information role has been presented by Larsen—who found that, in Aguacatec (an ergative Mayan language spoken near Sacapultec), new entities do not appear in ergative role.

In my own discourse research (Du Bois 1981a,b, 1985a), I have focused on demonstrating the existence of constraints on role in the domains of both grammar and pragmatics; and I have been especially concerned to demonstrate the consequences of these constraints for the shape of grammars. This leads us to consider the relation of my research to previous interpretations of ergativity.

5.2. INTERPRETATIONS OF ERGATIVITY. While my discourse findings have wide implications for, and interactions with, current interpretations of ergativity, here I can only touch on a few of the aspects which most closely impinge on the present research. Among current theories, some seek to provide a functional or semantic explanation for the existence and/or structural distribution of an A vs. S/O structural alignment (Silverstein 1976, Dixon 1979, Comrie 1981, DeLancey 1981, Keenan 1984; cf. also Regamey 1954). Others offer only

[25] On the parallel issue of overt occurrence of lexical forms, Feldman et al. have observed (1978:391) that, in the signing of certain 'linguistically deprived' American deaf children, the Actor sign is deleted far more often than expected by chance, while the Patient sign occurs with greater than expected frequency.

a formal descriptive apparatus which, at best, treats this alignment as the result of an arbitrarily set parameter (cf. Marantz). Here I am only concerned with aspects of some of the attempts to provide a non-stipulative explanation for the existence of the ergative alignment. For the present I must also restrict my attention to languages which show ergative/absolutive organization in the standard sense of fixed grammatical structure,[26] leaving aside languages with ergative-like patterns such as those which occur in some aspects of accusative languages.

One prominent approach reckons the accusative and ergative morphological systems as two alternative ways of solving the same functional problems, particularly that of economically discriminating the reference of the two arguments in a transitive clause. Silverstein, for example, suggests that it is 'impossible not to have means of agent-patient inflectional distinction' (1976:124; see below for discussion of other interacting features in the more complex interpretation he posits). It would be possible to mark each of A, S, and O with a different set of forms, and this would discriminate grammatical relations maximally. But since there is no chance of confusion in intransitive sentences, which have only one argument, it is possible to economize categories by treating just the transitive arguments, A and O, differently from each other—and then giving S either the treatment already employed for A, or the treatment already employed for O. If one of the crucial functions of a case-marking or other system that encodes grammatical relations is to distinguish the reference of confusable arguments—preferably with just the minimum number of distinct sets of forms—then accusative and ergative languages succeed equally, and economically, by different means. Thus Comrie (1978:380) suggests that 'from the viewpoint of the discriminatory function of case-marking (discrimination of S, A, and P)', both the ergative/absolutive and nominative/accusative types are highly motivated:

> 'both types have only two morphological categories, with which they make the relevant distinction among S, A, and P where it is most needed (clauses with both A and P), and from this viewpoint it is irrelevant whether S is identified morphologically with A or with P.'

(Cf. also Silverstein 1976, Dixon 1979, Mallinson & Blake 1982.)

However, a problem for this theory is that, in connected discourse, transitive clauses which actually contain both an overt A and an overt O are rare. The typical transitive clause defined by PAS has the surface form V $A_{\{O\}}$, where the A argument is non-lexical and the O lexical. Thus one strategy available

[26] Another important line of recent research has sought to identify discourse functions which are associated either with some specific grammatical aspect of a language which has traditionally been recognized as grammatically ergative (e.g. a study of the discourse role of antipassives in Eskimo by Kalmar 1979—but see critique by Sadock 1984:143–7), or with an ergative-like phenomenon in the discourse of a language which has not consistently been recognized as grammatically ergative in the traditional sense (e.g. studies of such issues as the markedness of the A role in various Austronesian languages, by Cooreman 1982, Cooreman et al. 1984, Hopper 1979a, 1983, 1987b and others; cf. Cumming & Wouk 1987 for references). Work on 'discourse ergativity' is certainly suggestive; however, the present paper deals primarily with a language that is plainly grammatically ergative in the traditional grammarian's sense, and has always been recognized as such.

to speakers is to make use of this PAS-derived information, supplemented by what they know about verb-based 'selection restrictions' etc., in order to interpret reference, under typical conditions. It seems that the discriminatory function of case-marking does not, by itself, provide a complete explanation for the ergative and accusative patterns.

Silverstein's seminal work, in a more complex interpretation, recognizes the importance of competition among motivations. He observes that 'case-marking systems are solving, as it were, several problems in semantic hierarchy: they represent referential adjuncts in propositions sensitive to inherent lexical content' (1976:162). He adduces four main variables which interact in the structuring of systems of grammatical relations, in systematic ways that are held to predict the possibilities for split systems of grammatical relations. Of these variables, the first has received the most attention: 'inherent referential content of noun phrases' (1981:229); this is organized in a complex feature-space characterized by hierarchically arrayed features—not a linear sequence, as in the most common simplified presentations of the Silverstein-inspired 'agency hierarchy' (cf. §4.3). Often overlooked is that, in addition to the variables of case relation (Agent-of, Patient-of etc.) and of clause-linkage type, Silverstein defines a fourth variable in the domain of discourse: 'reference-maintenance relations of arguments of predicates (as expressed by noun phrases in non-linked clausal structures across discourse-level structures)' (1981:230).

Features of the type Silverstein employs are important if we are to recognize the interplay of competing motivations: the fact that a particular NP has feature values in several dimensions is what allows it to be governed by the distinct organizing principles that pertain to those dimensions (Du Bois 1985a:354). Silverstein explicitly recognizes that systems for marking grammatical relations are responsive to several demands at once. But his analysis suggests that this competition is played out in the domain of types, through direct interaction among hierarchically arrayed, abstract feature values which define abstract NP types; by contrast, my analysis is predicated on the assumption that the competition is played out in the domain of tokens. In parole, we find a mass of tokens organized in accordance both with the functional goals of the speakers that produced them, and with the grammar that they used to do this. This aggregate of tokens shows certain patterns—which in fact crosscut each other in different dimensions, to the extent that a particular word or morpheme has values in more than one dimension. The features in question may well be derived from the language system: the domain of grammatical types. But this is not the same as an analysis which treats grammatical alignments as competing within the abstract domain of universal feature hierarchies. The latter view makes possible a diagram of relations among abstract feature values, representable on a single page (e.g. Silverstein 1981:240)—which, without reference to frequencies of tokens, can by hypothesis be used to predict possible structural types (attested split ergative systems etc.) In my analysis, by contrast, the facts which determine the array of occurring grammar types in the world's languages must include (among other things) the frequencies of feature co-occurrences in parole.

This approach demands in effect a new linguistics of parole, if we are to discover the critical facts about how strong the various motivating forces are, where they conflict, and where they converge. The token in parole can no longer be viewed merely as an instantiation of a type in langue. Rather, a new kind of fact is present in the specific token, qua token: namely, the positive fact of co-occurrence of certain feature values. Such positive facts taken in the aggregate determine, in part, the relative force which accrues to each of the various motivations which enter into a given competition—and hence, ultimately, the shape of grammars.

Conclusions

6. I have sought to demonstrate the existence of a motivation in discourse for the grammatical phenomenon of ergativity. This motivation is based on the distribution of lexical arguments and new mentions across grammatical roles in discourse. From the viewpoint of studies of information flow in discourse, I have identified a previously unrecognized pattern of distribution of lexical arguments in the aggregate of instances of language use, constraining both quantity and role; this I have formulated as the grammatical dimension of PAS. I have also identified a pragmatic dimension of PAS, characterized by a consistent patterning of new information relative to surface-syntactic argument positions. Information flow has a grammatical shape: distribution of new information is correlated with the ergative/absolutive structural opposition. These discoveries form the basis for postulation of a discourse basis for ergativity. At the same time, a competing discourse pattern that motivates one of the major alternative grammatical types, the accusative, has been confirmed. The discourse basis of ergativity may well be universally present in the spontaneous spoken discourse of all speech communities; it constitutes a type-independent pressure toward ergative structural alignment. But it competes with the pressure of topic continuity for the structuring of grammatical relations, and thus does not always emerge as overt fixed grammatical structure. In all, I have sought to demonstrate that language-internal phenomena as basic as the system of grammatical relations can be structured by forces arising out of discourse.

We must reject the traditional view of language use as a mere instantiation of the categories and structures of an autonomous language system. In one common view, regularities discovered in speech are, at best, reflections of regularities in language. Structured performance reflects—if imperfectly—structured competence. Tokens (in discourse) merely instantiate types (in grammar); thus any structure observable in discourse must derive from categories and rules of the grammar (including possibly, discourse grammar) known and used by the speaker who produced the utterance. To the extent that it is possible to find evidence, within attested speech, that speech is rule-governed,[27] the

[27] I leave aside what can only be called a rumor, often repeated in some quarters, that attested speech is rife with irregularities and ungrammaticalities; other scholars have offered a sufficient critique of this notion.

rules thereupon postulated are attributed to the speakers' knowledge of their grammar.[28]

In contrast, I have tried to show here that regularities exist in speech which are not necessarily instantiations of any type in grammar; nor do the systematic patterns in what speakers say necessarily derive from rules of grammar that they know. The natural response to such an observation, for the linguist committed to an equation of linguistic theory with competence theory, would be to pronounce such patterns non-linguistic in principle, and to exclude their study from the domain of linguistic theory. But this puts such linguists at a severe disadvantage when the time comes to explain the existence of linguistic structures, rather than simply to assign them formal descriptions. If, as I have argued, ergative grammatical structure is built on a pattern provided in the aggregate of tokens in discourse, then any adequate theory of grammar which hopes to explain the existence of ergative grammar had better have access to the facts of recurrent discourse patterning. An answer to the question 'Why are there ergative languages in the world?' must in principle refer to the ergative patterning of language use, which constitutes the discourse basis of ergative grammar. Of course, an adequate theory will need to build a full account of how such discourse patterns become grammaticized into language structure (cf. Givón 1979, Du Bois 1985a, Haiman 1985.)

Given the precedent of a discourse basis for ergativity—and the growing grammatical sophistication of the entire field of discourse analysis—we should not be surprised if, in the coming years, more and more of the most fundamental aspects of grammar are revealed as shaped by language use. In the long run, the most valuable result of the present study may come through establishing, not a specific new finding, but a new type of (bipartite) question: What is the functional/structural patterning of the aggregate of tokens in discourse? And how does this patterning govern the shape of grammars? Once aware of the existence of patterns like PAS, we can approach discourse with an eye to discovering other such patterns of preference for particular structural and functional arrays. This will be especially fruitful if we draw on the body of discoveries already available to us in the field of linguistics, by looking for arrays which are relatable, on the one hand, to structures which typological studies show to be commonly codified in the (categorical) grammatical rules of languages—and, on the other hand, to a recognized functional basis. If 'Grammars code best what speakers do most', then we should expect to find that recurrent grammatical patterns, as identified in the study of language universals, turn out to be built on preferred patterns in discourse—on a foundation that is laid out systematically in the aggregate of instances of functionally driven language use. Given that any utterance in a discourse is structured simultaneously from several distinct points of view, or in distinct dimensions—including such distinct dimensions as givenness and topicality—we should recognize that the

[28] Even sociolinguistic variation theory can be seen as retaining the machine metaphor of generative grammar, with the simple addition of a rheostat in the form of variable rules. Here again, performance simply reflects the rules (now variable) of grammar.

patterning of the token aggregate will display distinct and even incompatible cleavages, depending on the dimension selected for emphasis. Rather than attempting to found a theory of grammar on the notion of a universal grammatical archetype, of which all actual languages are only instantiations—with the options (or parameters) set by an external social environment which the theory treats helplessly as contributing only idiosyncrasy—I suggest a view of divergent grammars as arising out of the complex patterns of crosscutting currents which are immediately and concretely co-present in the actual stream of discourse. If, as suggested above, the deepest patterns of function in discourse are constant across languages of divergent grammatical type, then the potential exists for founding a theory of language on something more directly observable, and with more straightforward implications for the structuring of human language, than an arbitrarily postulated universal archetype of grammar. In sum, if we can identify what speakers do most, and demonstrate that this is both consistent and systematically structured along crosscutting dimensions, then we will stand ready to address effectively the longstanding question of what it is that the divergent grammars of the world's languages have in common. We are now in a position to test the hypothesis that grammars are systematically built up on a common foundation of function—simultaneously structured in multiple dimensions, in potentially incompatible ways—through the complex, but well-defined, processes of the grammaticization of patterning in the token aggregate.

REFERENCES

AYRES, GLENN. 1983. The antipassive 'voice' in Ixil. IJAL 49.20–45.

CHAFE, WALLACE L. 1970a. Meaning and the structure of language. Chicago: University of Chicago Press.

——. 1970b. A semantically based sketch of Onondaga. (Indiana University publications in anthropology and linguistics, Memoir 25.) Bloomington.

——. 1976. Givenness, contrastiveness, definiteness, subjects, topics, and point of view. Subject and topic, ed by Charles N. Li, 25–55. New York: Academic Press.

——. 1979. The flow of thought and the flow of language. Discourse and syntax (Syntax and semantics, 12), ed. by Talmy Givón, 159–81. New York: Academic Press.

——. 1980a (ed.) The pear stories: Cognitive, cultural, and linguistic aspects of narrative production. Norwood, NJ: Ablex.

——. 1980b. The deployment of consciousness in the production of a narrative. In Chafe 1980a:9–50.

——. 1987. Cognitive constraints on information flow. To appear in Tomlin (ed.)

CLANCY, PATRICIA. 1980. Referential choice in English and Japanese narrative discourse. In Chafe 1980a:127–202.

COMRIE, BERNARD. 1978. Ergativity. Syntactic typology, ed. by Winfred P. Lehmann, 329–94. Austin: University of Texas Press.

——. 1981. Language universals and linguistic typology: Syntax and morphology. Chicago: University of Chicago Press.

COOREMAN, ANN. 1982. Topicality, ergativity, and transitivity in narrative discourse: Evidence from Chamorro. Studies in Language 6.343–74.

——; BARBARA FOX; and TALMY GIVÓN. 1984. The discourse definition of ergativity. Studies in Language 8.1–34.

CRAIG, COLETTE G. 1987. The Rama language: A text with grammatical notes. To appear in Journal of Chibchan Studies 5.

CRUTTENDEN, ALAN. 1986. Intonation. Cambridge: University Press.

CUMMING, SUSANNA, and FAY WOUK. 1987. Is there 'discourse ergativity' in Austronesian languages? To appear in Lingua (Special issue on ergativity, ed. by Robert M. W. Dixon).
DAYLEY, JON P. 1981. Voice and ergativity in Mayan languages. Journal of Mayan Linguistics 2.3–82.
DELANCEY, SCOTT. 1981. An interpretation of split ergativity and related patterns. Lg. 57.626–57.
DIXON, ROBERT M. W. 1972. The Dyirbal language of North Queensland. Cambridge: University Press.
——. 1979. Ergativity. Lg. 55.59–138.
——. 1987. Introduction to special issue of Lingua on ergativity, to appear.
DOWNING, PAMELA. 1985. Classifier constructions and referentiality marking in Japanese. Paper presented at the Conference on Japanese Language and Linguistics, UCLA.
DU BOIS, JOHN W. 1980a. The search for a cultural niche: Showing the Pear Film in a Mayan community. In Chafe 1980a:1–7.
——. 1980b. Beyond definiteness: The trace of identity in discourse. In Chafe 1980a:203–74.
——. 1981a. Ergativity and preferred argument structure in Sacapultec discourse. University of California, Santa Barbara, MS.
——. 1981b. The Sacapultec language. Berkeley: University of California dissertation.
——. 1985a. Competing motivations. Iconicity in syntax, ed. by John Haiman, 343–65. Amsterdam: Benjamins.
——. 1985b. Mayan morpheme structure and the final vowel question in Quichean. Journal of Mayan Linguistics 5.1–71.
——. 1987a. Absolutive zero: Paradigm adaptivity in Sacapultec Maya. To appear in Lingua. (Special issue on ergativity, ed. by Robert M. W. Dixon.)
——. 1987b. Constraint and strategy: Transitivity in the management of information flow. UCLA, MS.
——. 1987c. The pear story in Sacapultec: A case study of information flow in narrative. To appear in Mayan Voices: Maya text and discourse, ed. by Louanna Furbee (Mayan Texts 4, Native American Texts Series.) Berlin: Mouton.
DUTRA, ROSALIA. 1987. The hybrid S category in Brazilian Portuguese: Some implications for word order. To appear in Studies in Language 11.
EEG-OLOFSSON, MATS, and JAN SVARTVIK. 1984. Four-level tagging of spoken English. Corpus linguistics, ed. by Jan Aarts and Willem Meijs, 53–64. Amsterdam: Rodopi.
ENGLAND, NORA C. 1983. Ergativity in Mamean (Mayan) languages. IJAL 49.1–19.
——. 1986. Mamean voice: Syntactic and narrative considerations. University of Iowa, MS.
FELDMAN, HEIDI; SUSAN GOLDIN-MEADOW; and LILA GLEITMAN. 1978. Beyond Herodotus: The creation of language by linguistically deprived deaf children. Action, gesture, and symbol, ed. by Andrew Lock, 351–414. New York: Academic Press.
FILLMORE, CHARLES J. 1968. The case for case. Universals of linguistic theory, ed. by Emmon Bach and Robert T. Harms, 1–88. New York: Holt, Rinehart & Winston.
——. 1977. Topics in lexical semantics. Current issues in linguistic theory, ed. by Roger W. Cole, 76–138. Bloomington: Indiana University Press.
FOX, BARBARA. 1984. Discourse structures and anaphora in written and conversational English. Los Angeles: University of California dissertation.
GIVÓN, TALMY. 1975. Focus and the scope of assertion: Some Bantu evidence. Studies in African Linguistics 6.185–205.
——. 1979. On understanding grammar. New York: Academic Press.
——. 1983a (ed.) Topic continuity in discourse: A quantitative cross-language study. Amsterdam: Benjamins.
——. 1983b. Introduction. In Givón 1983a:1–41.
——; W. KELLOGG; MICHAEL POSNER; and P. YEE. 1985. The tracking of automated

referents in discourse: Automated vs. attended processes. (Technical Report 85-3.) Eugene: Cognitive Science Program, University of Oregon.
HAIMAN, JOHN. 1985. Introduction. Iconicity in syntax, ed. by J. Haiman (Typological studies in language, 6), 1–7. Amsterdam: Benjamins.
HARRIS, ALICE C. 1982. Georgian and the Unaccusative Hypothesis. Lg. 58.290–306.
HOPPER, PAUL. 1979a. Some discourse sources of ergativity. Working Papers in Linguistics, University of Hawaii, 11.137–53.
——. 1979b. Aspect and foregrounding in discourse. In Discourse and syntax, ed. by Talmy Givón (Syntax and semantics, 12), 213–41. New York: Academic Press.
——. 1983. Ergative, passive, and active in Malay narrative. Discourse perspectives on syntax, ed. by Flora Klein-Andreu, 67–88. New York: Academic Press.
——. 1987a. How ergative is Malay? Papers from the Third Eastern Conference on Austronesian Linguistics. Athens, OH: Southeast Asian Center, Ohio University.
——. 1987b. Emergent grammar and the A-Priori Postulate. To appear in a volume edited by Deborah Tannen.
——, and SANDRA A. THOMPSON. 1980. Transitivity in grammar and discourse. Lg. 56.251–99.
IWASAKI, SHOICHI. 1985. The 'Given A Constraint' and the Japanese particle *ga*. Proceedings of the First Annual Pacific Linguistics Conference, ed. by Scott DeLancey and Russell S. Tomlin, 152–67. Eugene: Dept. of Linguistics, University of Oregon.
KALMAR, IVAN. 1979. The antipassive and grammatical relations in Eskimo. In Plank, 117–43.
KEENAN, EDWARD L. 1984. Semantic correlates of the ergative/absolutive distinction. Linguistics 22.197–223.
LAMBRECHT, KNUD. 1987. On the status of SVO sentences in French discourse. To appear in Tomlin (ed.)
LARSEN, THOMAS W. 1981. Functional correlates of ergativity in Aguacatec. Berkeley Linguistics Society 7.136–153.
——, and WILLIAM M. NORMAN. 1979. Correlates of ergativity in Mayan grammar. In Plank, 347–70.
LEE, HYO SANG. 1984. The distribution of preferred argument structure. UCLA, MS.
LI, CHARLES N., and SANDRA A. THOMPSON. 1976. Subject and topic: A new typology of language. In Subject and topic, ed. by Charles N. Li, 457–89. New York: Academic Press.
MALLINSON, GRAHAM, and BARRY J. BLAKE. 1982. Language typology: Cross-linguistic studies in syntax. Amsterdam: North-Holland.
MARANTZ, ALEC P. 1984. On the nature of grammatical relations. Cambridge, MA: MIT Press.
MCLENDON, SALLY. 1978. Ergativity, case and transitivity in Eastern Pomo. IJAL 44.1–9.
MERLAN, FRANCESCA. 1985. Split intransitivity: Functional oppositions in intransitive inflection. Grammar inside and outside the clause, ed. by Johanna Nichols and Anthony C. Woodbury, 324–62. Cambridge: University Press.
MITHUN, MARIANNE. 1986. When zero isn't there. Berkeley Linguistics Society 12.195–211.
MORAVCSIK, EDITH. 1978. On the distribution of ergative and accusative patterns. Lingua 45.223–79.
MUNRO, PAMELA, and LYNN GORDON. 1982. Syntactic relations in Western Muskogean. Lg. 58.81–115.
NICHOLS, JOHANNA. 1985. The grammatical marking of theme in literary Russian. Issues in Russian morphosyntax, ed. by Michael S. Flier and Richard D. Brecht (UCLA Slavic studies, 11), 170–86. Columbus, OH: Slavica.
——. 1986. Head-marking and dependent-marking grammar. Lg. 62.56–119.
PAWLEY, ANDREW, and FRANCES HODGETTS SYDER. 1977. The One Clause at a Time Hypothesis. University of Auckland, MS.

——, ——. 1983. Natural selection in syntax: Notes on adaptive variation and change in vernacular and literary grammar. Journal of Pragmatics 7.551–79.

PAYNE, DORIS L. 1987. Information structuring in Papago narrative discourse. Lg. 63.783–804.

PLANK, FRANS. 1979 (ed.) Ergativity: Towards a theory of grammatical relations. London: Academic Press.

REGAMEY, CONSTANTIN. 1954. À propos de la 'construction ergative' en indo-aryen moderne. Sprachgeschichte und Wortbedeutung: Festschrift Albert Debrunner, 368–87. Bern.

SADOCK, JERROLD M. 1984. Whither radical pragmatics? Georgetown University Round Table on Languages and Linguistics 1984, ed. by Deborah Schiffrin, 139–49. Washington, DC: Georgetown University Press.

SAPIR, EDWARD. 1917. Review of 'Het passieve karakter ...', by C. C. Uhlenbeck. IJAL 1.82–6.

SASSE, HANS-JÜRGEN. 1982. Subjektprominenz. Fakten und Theorien: Festschrift für H. Stimm, 267–86. Tübingen: Narr.

SCANCARELLI, JANINE S. 1985. Referential strategies in Chamorro narratives: Preferred clause structure and ergativity. Studies in Language 9.335–62.

SCHUETZE-COBURN, STEPHAN. 1987. Topic management and the lexicon: A discourse profile of three-argument verbs in German. Los Angeles: UCLA master's thesis.

SILVERSTEIN, MICHAEL. 1976. Hierarchy of features and ergativity. Grammatical categories in Australian languages, ed. by Robert M. W. Dixon, 112–71. New York: Humanities Press.

——. 1980. Cognitive implications of a referential hierarchy. Unpublished paper presented at the Max Planck Institut für Psycholinguistik, Nijmegen, Holland.

——. 1981. Case-marking and the nature of language. Australian Journal of Linguistics 1.227–44.

SMITH, WENDY. 1987. Preferred Argument Structure in spoken Hebrew discourse. UCLA, MS.

SMITH-STARK, THOMAS C. 1978. The Mayan antipassive: Some facts and fictions. Papers in Mayan Linguistics, ed. by Nora C. England (Miscellaneous publications in anthropology, 6; Studies in Mayan linguistics, 2), 169–87. Columbia, MO: Museum of Anthropology, University of Missouri.

STEWART, ANNE. 1984. A glance at Preferred Argument Structure in Conchucos Quechua. UCLA, MS.

SVARTVIK, JAN. 1982. The segmentation of impromptu speech. Impromptu speech, ed. by Nils Erik Enkvist (Publications of the Research Institute of the Åbo Akademi, 78), 131–45. Åbo, Finland.

——, et al. 1982. Survey of spoken English: Report on research, 1975–1981. Lund: Gleerup.

TOMLIN, RUSSELL S. 1987 (ed.) Coherence and grounding in discourse. To appear, Amsterdam: Benjamins.

VERHAAR, JOHN. 1983. Ergativity, accusativity, and hierarchy. (Sophia linguistica, 11.) Tokyo: Sophia University.

[Received 25 January 1985;
revision received 11 March 1987;
accepted 18 April 1987.]