MATHÉMATIQUES ET SCIENCES HUMAINES

SEBASTIAN SHAUMYAN

The goals of linguistic theory and applicative grammar

Mathématiques et sciences humaines, tome 77 (1982), p. 7-42
<http://www.numdam.org/item?id=MSH_1982__77__7_0>

© Centre d'analyse et de mathématiques sociales de l'EHESS, 1982, tous droits réservés.

L'accès aux archives de la revue « Mathématiques et sciences humaines » (http://msh.revues.org/) implique l'accord avec les conditions générales d'utilisation (http://www.numdam.org/conditions). Toute utilisation commerciale ou impression systématique est constitutive d'une infraction pénale. Toute copie ou impression de ce fichier doit contenir la présente mention de copyright.

NUMDAM
Article numérisé dans le cadre du programme
Numérisation de documents anciens mathématiques
http://www.numdam.org/

Math. Sci. hum. (*20e* année, n°77, *1982*, p.7-42)

THE GOALS OF LINGUISTIC THEORY AND APPLICATIVE GRAMMAR

Sebastian Shaumyan *

1. On the Goals of Linguistic Theory

By observing natural languages it becomes obvious that there are many differences among them; not only are genetically unrelated languages, like English and Chinese, very dissimilar, but also languages that have a common origin, like English and German, differ from one another in many important ways. And yet, one can also discover important similarities among languages. Thus, the grammar of every language includes a system of obligatory syntactic functions. For instance, not every language differentiates between noun-phrases and verb-phrases, but every language must differentiate between the two basic components of a sentence: predicates and their terms.

On the other hand, although languages may vary greatly one from another, the possibilities of variation among languages are not unlimited: there are regular patterns of variation among languages which are limited by intrinsic functional and structural properties of signs. For instance, languages may vary in word order patterns, but these patterns can be reduced to a limited number of types determined by the intrinsic linearity of sign sequences in human speech. Language typology is possible only because there are functional and structural constraints on possible differences among languages.

* Yale University

Linguistic similarities and differences seem to be determined by some unknown factors which constitute the essence of natural languages. Therefore linguistic similarities and differences must be recognized as significant phenomena which provide clues to the understanding of what a natural language is. These phenomena must be explained in terms of principles that account for the essence of natural languages.

The basic question of linguistic theory must be:

What factors contribute to the similarities and differences in natural languages?

To answer this question linguistic theory must achieve the following goals.

First, it must state linguistic universals, that is principles that are considered true of the grammar of every possible natural language.

Second, it must state principles of possible variations among languages, that is principles that characterize the interrelation of language types.

Third, it must be able to explain facts of individual languages, that is to subsume these facts under classes of phenomena characterized by the principles it has stated.

Fourth, it must provide conceptual and formal tools for constructing explanatory grammars of typologically different individual languages.

2. The Basic Claim of Applicative Grammar

The basic claim of Applicative Grammar (henceforth AG) is that an abstract system of linguistic operators called the genotype language is needed to achieve the goals of linguistic theory. (Operators are combined by means of a binary operation called application; hence the term Applicative Grammar.)

Cross-linguistic generalizations in terms of the genotype language make it possible to claim that what at first may appear to be disparate phenomena in different languages are in reality instances of the same phenomenon, and, vice versa, what at first may appear to be instances of the same phenomenon are in reality very different phenomena.

The genotype language makes it possible to uncover an identical structure underlying language-particular constructions in different languages. For instance, relative clauses are so different in typologically different languages that in order to form a cross-linguistic generalization about what is the same in relative clauses in a variety of different languages, we must define heterogeneous and incommensurate language-particular phenomena in terms of homogeneous and commensurable objects—linguistic operators. Due to the genotype language relative clauses in different languages are seen to have the same structure: a combination of a clause with an operator transposing this clause into a modifier of a term. By uncovering the same structure underlying seemingly disparate phenomena in different languages AG explains these phenomena as instances of the same operators, theoretical constructs providing insights into the essence of natural languages.

3. The Syntactic Representation of Sentence Structure

Syntactic representations in AG are given in terms of the notions operator, operand, resultant, and application.

An operator is any kind of linguistic device which acts on one or more expressions called its operands to form an expression called its resultant. For example, in the English expression the hunter killed the bear the word killed is an operator that acts on its operands the hunter and the bear; in gray car the expression gray is an operator that acts on its operand car. If an operator has one operand, it is called a one-place operator, if an operator has n operands it is called an n-place operator.

It is important to notice that in accordance with the definition of the operator as a linguistic device instances of an operator do not have to be only concrete expressions, like words or morphemes. For instance, a predicate may be represented by intonation. So, in the following verse from a poem by the Russian poet A. Blok Noč'. Ulica. Fonar'. Apteka. 'Night. Street. Lantern. Pharmacy.' we have four sentences. In each of these sentences the intonation serves as an operator which acts on a term to form a sentence.

Another example of an operator which is not a concrete expression is a truncation. For instance, bel 'is white' in the Russian sentence Sneg bel 'The snow is white' is the resultant of the truncation of the suffix -yj in the word bel-yj 'white'. Here the truncation serves as an operator which acts on the adjective bel-yj to form the predicate bel 'is white'.

In terms of the notions operator, operand, resultant and primitives term and sentence I define the formal concepts one-place predicate, two-place predicate, three-place predicate and the formal concepts primary term, secondary term, tertiary term.

Definition 1. If X is an operator which acts on a term Y to form a sentence Z, then X is a one-place predicate and Y is a primary term.

Definition 2. If X is an operator which acts on a term Y to form a one-place predicate Z, then X is a two-place predicate and Y is a secondary term.

Definition 3. If X is an operator which acts on a term Y to form a two-place predicate Z, then X is a three-place predicate and Y is a tertiary term.

The opposition of a primary and a secondary term constitutes the nucleus of a sentence. These terms I call nuclear.

It follows from the Definitions 1-2 that primary terms occur both in the opposition primary term:secondary term (with two-place predicates) and outside this opposition (with one-place predicates). Therefore, the position with a one-place predicate must be regarded as the point of the neutralization of the opposition primary term:secondary term which is represented by the primary term in this position. The primary term is the neutral-negative (unmarked) member and the secondary term is the positive (marked) member of this opposition.

As will be shown in Section 4, such notions as subject, direct object, indirect object cannot be considered universal concepts. They are appropriate for accusative languages but break down when applied to er-

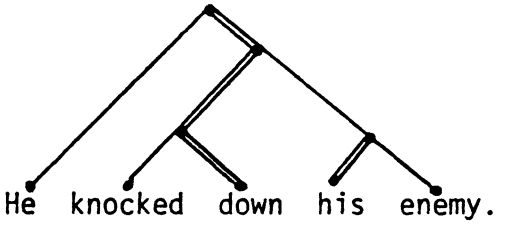
gative languages. It will be shown that, in order to understand syntactic processes in ergative languages, these processes must be accounted for in terms of the formal notions of AG primary term and secondary term rather than in terms subject and direct object. I will argue that in accusative languages the formal notion primary term must be interpreted as subject and the formal notion secondary term, as direct object; in ergative languages primary term must be interpreted as the syntactic function absolutive and secondary term, as the syntactic function ergative. (The syntactic functions absolutive and ergative must be distinguished from the morphological cases absolutive and ergative.)

Let us focus on the operation of the combination of the operator with its operands. According to the definition of this operation in ordinary logic an n-place operator combines with its operands in one step. This definition treats all operands as if they have equally close connection with their operator. But usually an operator is more closely connected with one operand than another. For example, a transitive verb is more closely connected with the secondary term (interpreted as object in accusative languages) than with the primary term (interpreted as subject in accusative languages). Thus, in the above example the hunter killed the bear the transitive predicate killed is more closely connected with the bear than with the hunter. To do justice to this phenomenon, we must redefine the combination of n-place operator with its operands as a series of binary operations: an n-place operator is applied to its first operand, then the resultant to the second operand, and so on. According to the new definition an n-place operator combines with its operands in n steps rather than in one step as in ordinary logic.

For example, any transitive predicate, which is a two-place operator, must be applied to the secondary term, then the resultant to the primary term. Thus, in the above example transitive predicate killed must be applied first to the bear, then to the hunter: ((killed the bear) the hunter). The new binary operation called application is used in combinatory logic.

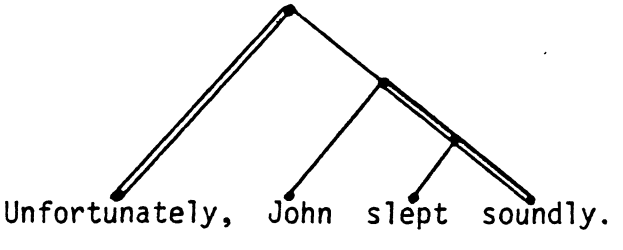
An applicative tree (henceforth AT) is a network of operators and operands combined by application. The sentence He knocked down his enemy may be presented by the following applicative tree:

(1)

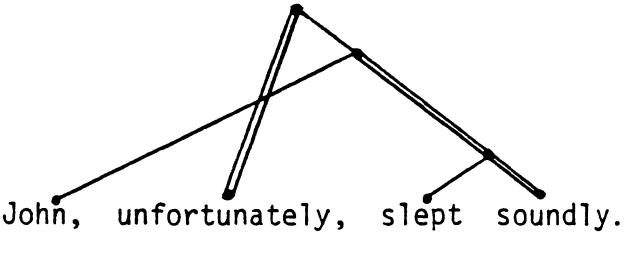


AT (1) differs from the familiar constituency tree in that operators are represented by double lines and operands are represented by single lines. AT presents relation operator:operand independently of the linear word order, as can be seen from the following example:

(2)



(3)



ATs (2) and (3) are equivalent from the relational point of view.

Any AT may be replaced with an equivalent linear formula with brackets. In the linear notation, by a convention, an operator must precede its operand, and both are put inside brackets.

Here are the equivalent linear formulae of the above ATs.

(4) (((DOWN KNOCKED)(HIS ENEMY))HE)

(5) (UNFORTUNATELY((SOUNDLY SLEPT)JOHN))

Formula (4) replaces AT (1). Formula (5) replaces ATs (2) and (3) since it is invariant under the changes of word order.

In a linear formula the brackets can be left out in accordance with the principle of left-wards grouping. Applying this convention to the above linear formulae we get:

(6) ((DOWN KNOCKED)(HIS ENEMY))HE

(7) UNFORTUNATELY((SOUNDLY SLEPT)JOHN)

4. Understanding Cross-linguistic Generalizations

A detailed discussion of the formal aspects of AG is outside the scope of the present paper. A complete presentation of the formal apparatus of AG is given in Shaumyan, 1977. Here I will consider an example of how AG can contribute to the understanding of cross-linguistic generalizations.

AG uses the notions of primary term, secondary term, tertiary term as theoretical constructs rather than the notions of subject, direct object, indirect object. One of the basic claims of AG is that grammatical relations such as subject of, direct object of, indirect object of are not valid universal linguistic categories.

It is interesting to compare this claim with the claim of Relational Grammar proposed by David M. Perlmutter and Paul M. Postal (Perlmutter and Postal, 1977) and Arc Pair Grammar, which is a completely different version of Relational Grammar developed by David E. Johnson and Paul M. Postal (Johnson and Postal, 1980).

However the two theories may differ, they share the basic claim that grammatical relations such as subject of, direct object of, indirect object of must be taken as primitives of linguistic theory. The assumption implied by this claim is that the notions of subject, direct object, indirect object are universal linguistic categories and must therefore be realized in the grammar of every natural language.

Whether or not the notions of subject, direct object, indirect object are valid universal categories is a major theoretical problem. I regard the claim of AG and the claim of Relational Grammar and Arc Pair Grammar as alternative hypotheses concerning an essential aspect of natural languages. In order to test these hypotheses, I will examine the Keenan-Comrie Accessibility Hierarchy (Keenan, Comrie, 1977).

In an important study of relative clause formation strategy Edward L. Keenan and Bernard Comrie established an Accessibility Hierarchy which characterizes the relative accessibility to relative clause formation of various members of a sentence. In terms of the Accessibility

Hierarchy they state universal constraints on relative clause formation. According to the Accessibility Hierarchy processes of relative clause formation are sensitive to the following hierarchy of grammatical relations:

Subject > Direct object > Indirect object > Oblique NP >
> Possessor > Object of comparison

where > means 'more accessible than'.

The positions on the Accessibility Hierarchy are to be understood as specifying a set of possible relativizations that a language may make: relativizations that apply at some point of the hierarchy must apply at any higher point. The Accessibility Hierarchy predicts, for instance, that there is no language which can relativize direct objects and not subjects or that can relativize possessors and subjects, but not direct objects and oblique NPs.

In terms of the Accessibility Hierarchy Keenan and Comrie state the following universal constraints on relative clause formation:

<u>The Hierarchy Constraints</u>

1. A language must be able to relativize subjects.
2. Any relative clause forming strategy must apply to a continuous segment of the Accessibility Hierarchy.
3. Strategies that apply at one point of the Accessibility Hierarchy may in principle cease to apply at any lower point.

Constraint (1) states that the grammar of any language must allow relativization on subjects. For instance, no language can relativize only locatives or direct objects. Constraint (2) says that a language

is free to treat the adjacent positions as the same, but it cannot skip positions. For example, if a given strategy can apply to both subjects and locatives, it must also apply to direct objects and indirect objects. Constraint (3) says that each point of the Accessibility Hierarchy can be a cut-off point for any strategy that applies to a higher point.

Here are some examples of the data that support the Hierarchy Constraints (Keenan, Comrie, 1977: 69-75).

Subjects only. Many Malayo-Polynesian languages (for example, Malagasy, Javanese, Iban, Toba-Batak) allow relativization only on subjects. Looking at Malagasy the major relative clause formation process basically is this: the head NP is placed to the left, followed optionally by an invariable relativizer izay, followed by the restricting clause. Notice that to relativize a direct object, the sentence is first passivized so that direct object becomes a subject:

(8) a. Nahita ny vehivavy ny mpianatra.
saw the woman the student
'The student saw the woman.'

b. ny mpianatra izay nahita ny vehivavy
the student that saw the woman
'the student that saw the woman'

c. *ny vehivavy izay nahita ny mpianatra
the woman that saw the student
'the womant that the student saw'

d. Nohitan' ny mpianatra ny vehivavy.
seen(passive) the student the woman
'The woman was seen by the student.'

e. ny vehivavy izay nohitan'ny mpianatra
the woman that seen the student
'the woman that was seen by the student'

Subject-Direct Object. Some languages, for example, Welsh or Finnish, allow relativization only on subjects and direct object. Finnish places the relative clause prenominally, uses no relativization marker, and puts the subordinate verb in a non-finite form. Here is an example from Finnish:

(9) a. Pöydällä tanssinut poika oli sairas.
on-table having-danced boy was sick.
'The boy who had danced on the table was sick.'
b. Näkemäni poika tanssi pöydällä.
I-having-seen boy danced on-table
'The boy that I saw danced on the table.'

Further examples (Subject-Indirect Object, Subject-Oblique, Subject-Genitive, Subject-Object of Comparison) can be found in the above paper by Keenan and Comrie.

The Accessibility Hierarchy excludes the possibility of languages where subjects are less accessible to relativization that objects. Yet this is precisely the case with Dyirbal and Mayan languages, if we identify ergatives with transitive subjects and absolutives with intransitive subjects and direct objects, as is done in Relational grammar (and in Arc Pair grammar). That is, these facts undermine the status of the Accessibility Hierarchy as a universal law.

In his important study of ergativity David E. Johnson gives this definition (Johnson, 1976: 2):

> A language is said to be absolutive/ergative (or simply, ergative) if some of its rules treat <subjects of intransitive clauses (SUI)> and <direct objects (DO)> alike in some manner to the exclusion of <subjects of transitive clauses (SUT)>. In contrast, a language

is said to be a nominative/accusative language if its rules identify <subjects of intransitive clauses> and <subjects of transitive clauses> as opposed to <direct objects>.

If we accept this definition of ergativity and apply it to Dyirbal and Mayan languages, we will wee that the data from these languages contravene the Accessibility Hierarchy.

Dyirbal does not allow relativization on ergative subjects; instead, the verb of the relative clause is intransitivized by adding the suffix -ŋay, and the subject is put into the absolutive case (Dixon, 1972: 100). For instance, consider the Dyirbal sentence

(10) yabu ŋuma+ŋgu bura+n
MOTHER(abs) FATHER+ERG SEE+PAST
'Father saw mother'

In sentence (10) the ergative subject is marked by -ŋgu. In order to be embedded to another sentence as a relative clause, sentence (10) must be antipassivized and ergative ŋuma+ŋgu replaced by absolutive ŋuma+Ø. We may get, for example, the sentence

(11) ŋuma+Ø [buṛal+ŋa+ŋu+Ø yabu+gu] duŋgara+nʸu
father+ABS see+ANTIPASS+REL+ABS mother+DAT cry+PAST
'Father, who saw mother, was crying.'

The features of Dyirbal under discussion here conform closely to those of Mayan grammar. So, in the languages of the Kanjobalan, Mamean and Quichean subgroups, ergative NPs may not as a rule be relativized (nor questioned or focused), while absolutive NPs can. In order for an ergative NP to undergo relativization, it must be converted into derived absolutive and the verb intransitivized through the addition of a spe-

cial intransitivizing suffix. Here is an example of this process in Aguacatec (Larsen and Norman, 1979).

(12) ja Ø-Ø-b'iy yaaj xna7n
asp. 3sB-3sA-HIT MAN WOMAN
"the man hit the woman"

(13) a. na7 m-Ø-b'iy-oon xna7n
WHO dep.asp.-3sB-HIT-suffix WOMAN
"who hit the woman?"
b. ja Ø-w-il yaaj ye m-Ø-b'iy-oon xna7n
asp. 3sB-1sA-SEE MAN THE dep.asp.-3sB-HIT-suffix WOMAN
"I saw the man who hit the woman"
c. yaaj m-Ø-b'iy-oon xna7n
MAN dep.asp.-3sB-HIT-suffix WOMAN
"it was the man who hit the woman"

Here -oon is the intransitivizing suffix used to circumvent the constraints on extraction of ergatives (the term extraction rules is a cover term for relativization rules, focus rules, WH-Question).

We see that the facts of Dyirbal and Mayan languages present strong evidence against the Accessibility Hierarchy. Does it mean that the Accessibility Hierarchy must be abandoned as a universal law? I do not think so. The trouble with the Accessibility Hierarchy is that it is formulated as a universal law in non-universal terms, such as subject, direct object, etc. To solve the difficulty, it is necessary to abandon non-universal concepts, such as subject and direct object, and replace them by truly universal concepts. The key to the solution of this difficulty is provided by AG.

Our first step is to split the Accessibility Hierarchy into two hi-

erarchies: one for accusative languages and one for ergative languages.

1) Subject > Direct object > Indirect object > ...
2) Absolutive > Ergative > Indirect object > ...

Here the terms ergative and absolutive mean syntactic functions distinct from syntactic functions subject and object rather than morphological cases.

Many ergative languages permit both ergative and absolutive NPs to relativize. But this does not undermine the distinct Accessibility Hierarchy for ergative languages. The crucial fact is that there are accusative languages that relativize only subjects, but there are no ergative languages that relativize only ergatives. On the other hand, there are ergative languages, like Dyirbal and Mayan languages, that relativize only absolutives.

Our second step is to collapse both hierarchies into an abstract Accessibility Hierarchy which reflects their isomorphism:

Primary term > Secondary term > Tertiary term > ...

We see that the confusion of ergatives with transitive subjects is inconsistent with the Accessibility Hierarchy; which creates an unresolvable difficulty. The treatment of ergatives and transitive subjects as different syntactic functions, on the other hand, leads to a deeper understanding of the Accessibility Hierarchy, which results in its restatement on an abstract level in keeping with true basic syntactic universals: primary, secondary, tertiary terms.

In order to vindicate the claim of AG that ergative and absolutive

are syntactic functions, I must also consider the notion of ergativity.

I have to discuss the claim that the only difference between the majority of ergative languages and accusative languages is in their morphology. For instance, in one of the most important contributions to the study of ergativity, Stephen R. Anderson adduces that on the basis of rules such as Equi-NP deletion and Subject raising embedded intransitive and transitive subjects are no more distinguished in Basque, an ergative language, than in English, an accusative language, and that subjects and direct objects are discriminated in both languages alike. Anderson concludes: "Rules such as those we have been considering, when investigated in virtually any ergative language point unambiguously in the direction we have indicated. They show that is, that from a syntactic point of view these languages are organized in the same way as are accusative languages, and that the basically syntactic notion of 'subject' has essentially the same reference in both language types" (Anderson, 1976: 16). Anderson admits that Dyirbal is different from accusative languages with respect to its syntax, but regards it as an insignificant anomaly. He writes: "Dyirbal, which as noted differs fundamentally from usual type, is in fact the exception which proves the rule" (Anderson, 1975: 23).

To investigate the notion 'subject' in ergative languages, Anderson examines the application of rules such as Equi-NP deletion and Subject raising in these languages. Anderson claims that the particular class of NPs in ergative languages—the absolutives in intransitive and the ergatives in transitive constructions—to which the rules in question apply constitute exactly the syntactic class denoted by the term 'sub-

ject' in the accusative languages. Anderson concludes that the notion 'subject' is the same in most ergative and accusative languages and therefore most ergative languages do not differ in their syntax from accusative languages, the only difference between them being "a comparatively trivial fact about morphology" (Anderson, 1976: 17).

A close examination of the relevant facts shows that in reality the two classes of NPs in the accusative and ergative languages are very different and therefore the term 'subject' is inappropriate to the class of NPs in the ergative languages. To see this, let us turn to Anderson's analysis. It cannot be denied that in most ergative languages, with respect to the application of Equi and Subject raising, ergatives are similar to transitive subjects of accusative languages. But does this similarity justify the generalization that in ergative languages the NPs to which Equi and Subject raising apply belong to the class of subjects?

To answer this question, we must bear in mind that the subject is a cluster concept, that is, a concept that is characterized by a set of properties rather than by a single property. The application of Equi and Subject raising is not sufficient criterion for determining the class of subjects. Among other criteria there is at least one that is crucial for characterizing the class of subjects. I mean the fundamental <u>Criterion of the Non-Omissibility of the Subject</u>. A non-subject may be eliminated from a sentence, which will still remains a complete sentence. But this is normally not true of the subject. For instance,

(14) a. Peter sells fruit (for a living).
b. Peter sells (for a living).
c. *Sells fruit (for a living).

The Criterion of the Non-Omissibility of the Subject is so important that some linguists consider it a single essential feature for the formal characterization of the subject (Martinet, 1975: 219-224). This criterion is high on Keenan's Subject Properties List (Keenan, 1976: 313; Keenan uses the term 'indispensability' instead of 'non-omissibility').

The Criterion of the Non-Omissibility of the Subject excludes the possibility of languages where subjects could be eliminated from sentences. Yet this is precisely the case with ergative languages, if we identify ergatives with transitive subjects and absolutives with intransitive subjects in intransitive constructions and with transitive objects in transitive constructions. In many ergative languages we can normally eliminate ergatives but we cannot eliminate absolutives from transitive constructions. Here is an example from Tongan (Churchward, 1953: 69):

(15) a. 'Oku taki au 'e Siale.
Charlie leads me.
b. 'Oku taki au.
Leads me. (I am led.)

<u>'e Siale</u> in (15a) is an ergative. It is omitted in (15b) which is a normal way of expressing in Tongan what we express in English by means of a passive verb (Tongan does not have passive).

Notice that in accusative languages the opposition <u>subject</u>:<u>direct object</u> is normally correlated with the opposition <u>active voice</u>:<u>passive voice</u>, while ergative languages normally do not have the opposition <u>active voice</u>:<u>passive voice</u>. This has significant consequences. In order

to compensate for the lack of the passive, ergative languages use the omission of ergatives as a normal syntactic procedure which corresponds to passivization in accusative languages (an absolutive in a construction with an omitted ergative corresponds to a subject in a passive construction in an accusative language) or use focus rules which make it possible to impart prominence to any member of a sentence (in this case either an absolutive or an ergative may correspond to a subject in an accusative language). Here is an example of the application of focus rules in Tongan (Churchward, 1953: 67):

(16) a. Na'e tāmate'i 'e Tēvita 'a Kōlaiate.
'David killed Goliath.'
b. Na'e tāmate'i 'a Kōlaiate 'e Tēvita.
'Goliath was killed by David.'

Sentence (16a) corresponds to David killed Goliath in English, while (16b) corresponds to Goliath was killed by David. In the first case, ergative 'e Tēvita corresponds to the subject David in the active construction, while, in the second case, absolutive 'a Kōlaiate corresponds to the subject Goliath in the passive. The focus rule gives prominence to the noun which immediately follows the verb, that is, to 'e Tēvita in (16a) and to 'a Kōlaiate in (16b).

In Tongan, as in many other ergative languages, we are faced with a serious difficulty resulting from the following contradiction: if the class of subjects is characterized by the application of Equi and Subject raising, then ergatives are subjects in transitive constructions and absolutives are subjects in intransitive constructions; but if the class of subjects is characterized by the Criterion of the Non-Omissibi-

lity of the Subject, then only absolutives can be subjects in transitive construction.

Since we cannot dispense with either of these criteria, this creates contradiction in defining the essential properties of the subject.

To solve this difficulty, we must recognize that ergative and absolutive cannot be defined in terms of subject and object but rather that these are distinct primitive syntactic functions.

Since the terms 'ergative' and 'absolutive' are already used for the designation of morphological cases, I introduce special symbols with superscripts which will be used when ambiguity might arise as to whether syntactic functions or morphological cases are meant: ERG^F means the syntactic function 'ergative', while ERG^C means the morphological case 'ergative'. Similarly, ABS^F and ABS^C.

The syntactic functions 'ergative' and 'absolutive' must be regarded as primitives independent of the syntactic functions 'subject' and 'object'.

We cannot agree with Anderson that the notion 'subject' is the same in English and in most ergative languages, simply because ergative languages have neither subjects nor objects. They have syntactic functions 'ergative' and 'absolutive' which are quite different from syntactic functions 'subject' and 'object' in English.

We can now formulate the Correspondence Hypothesis: The morphological opposition of case markings ERG^C:ABS^C corresponds to syntactic opposition ERG^F:ABS^F, which is independent of the syntactic opposition subject:object in accusative languages.

The symbols ERG^C and ABS^C are generalized designations of case mark-

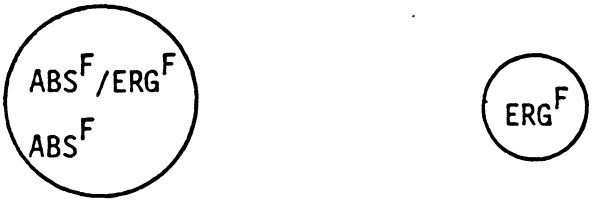
ings. So ERG^C may designate not only an ergative case morpheme but any oblique case morpheme, say a Dative or Instrumental, or a class of morphemes which are in a complementary distribution as case markings of ergative.

Let us now consider the syntactic oppositions ergative:absolutive and subject:object more closely.

Both these oppositions can be neutralized. Thus ergatives and absolutives contrast only as arguments of two-place predicates. The point of neutralization is the NP position in a one-place predicate where only an absolutive occurs. Since in the point of neutralization an absolutive replaces the opposition ergative:absolutive, it can function either as an ergative or as an absolutive, that is, semantically, it may denote either an agent (the meaning of an ergative) or a patient (the meaning of an absolutive of a two-place predicate).

The absolutive is a neutral-negative (unmarked) member of the syntactic opposition ergative:absolutive and the ergative is a positive (marked) member of this opposition. This may be represented by the following diagram:

(17)



Subjects and objects contrast only as arguments of two-place predicates. The point of neutralization is the NP position in a one-place predicate where only a subject occurs. Since in the point of neutralization a subject replaces the opposition subject:object, it can function

either as a subject or as an object, that is, semantically, it may denote either an agent (the meaning of transitive subject) or a patient (the meaning of an object).

The subject is a neutral-negative (unmarked) member of syntactic opposition subject:object and the object is a positive (marked) member of this opposition. This may be represented by the following diagram:

(18)

We come up with the opposition unmarked term:marked term. On the basis of this opposition we establish the following correspondence between terms in ergative and accusative constructions.

Opposition of markedness	Ergative construction	Accusative construction
Unmarked term	Absolutive	Subject
Marked term	Ergative	Object

Examples of the neutralization of syntactic oppositions in English:

(19) a. John sells automobiles.
b. John dances well.
c. Automobiles sell well.
d. Automobiles are sold.

In (19a), which is a transitive construction, the transitive subject John is an agent, and the transitive object automobiles is a patient. In the intransitive constructions a subject denotes either an agent, in

(19b), or a patient, in (19c) and (19d).

Examples of the neutralization of syntactic oppositions in Tongan:

(20) a. Na'e inu 'a e kava 'e Sione.
Past drink Abs. the kava Erg. John
'John drank the kava.'

b. Na'e inu 'a Sione.
Past drink Abs. John
'John drank.'

c. Na'e lea 'a Tolu.
Past speak Abs. Tolu
'Tolu spoke.'

d. Na'e 'uheina 'a e ngoué.
Past rain Abs. the garden
'The garden was rained upon.'

In (20a) ergative 'e Sione denotes an agent and absolutive 'a e kava denotes a patient. In (20b) the transitive inu is used as an intransitive verb, therefore here we have absolutive 'a Sione instead of ergative 'e Sione. In (20c) absolutive 'a Tolu denotes an agent. In (20d) absolutive 'a e ngoué denotes a patient.

We can now formulate a law which I call the Law of Duality:

The marked term of an ergative construction corresponds to the unmarked term of an accusative construction, and the unmarked term of an ergative construction corresponds to the marked term of an accusative construction; and vice versa, the marked term of an accusative construction corresponds to the unmarked term of an ergative construction, and the unmarked term of an accusative construction corresponds to the marked term of an ergative construction.

An accusative construction and an ergative construction will be called duals of each other.

The Law of Duality means that accusative and ergative constructions relate to each other as mirror images. The marked and unmarked terms in accusative and ergative constructions are polar categories, like, for example, positive and negative electric charges; a correspondence of unmarked terms to marked terms and of marked terms to unmarked terms may be compared to what physicists call 'charge conjugation', a change of all plus charges to minus and all minus to plus.

The proposed Law of Duality also reminds one of laws of duality in projective geometry and mathematical logic. For example, in logic duals are formed by changing alternation to conjunction in a formula and vice versa.

One important consequence of the Law of Duality is that the opposition of voices in ergative languages is a mirror image of the opposition of voices in accusative languages: the basic voice in ergative languages corresponds to the derived voice in accusative languages, and the derived voice in ergative languages corresponds to the basic voice in accusative languages.

Since in accusative languages the basic voice is active and the derived voice is passive, this means that pure ergative languages cannot have a passive voice in the sense of accusative languages. Rather pure ergative languages can have a voice which is converse in its effect to the passive of accusative languages—the so-called antipassive.

A mixed ergative language can have the passive voice only as a part of its accusative subsystem.

What sometimes is called the passive voice in ergative languages cannot be regarded as the true passive from a syntactic point of view.

Consider the following example from Georgian:

(21) a. Kali da - i - xat - a student-ma.
woman(Abs.) perfective prefix himself paint Past student Erg.
"The student painted himself the woman."

b. Kali da - i - xat - a student-is mier.
woman(Abs.) perfective prefix himself paint Past student by
"The woman was painted by the student."

It is clear that (21a) has the meaning of the active and (21b) has the meaning of the passive. But the difference in meaning between (21a) and (21b) does not involve the change of the predicate structure—rather the predicate remains unchanged. This difference is semantic rather than syntactic. Since the difference in meaning between the two constructions is determined only by the two different ways of presenting the agent, (21b) cannot be considered a passive construction from a syntactic point of view.

With respect to the opposition primary term:secondary term, it is important to notice the following. Some syntactic rules in many ergative languages require for their statement reference to both the ergative and the absolutive, but not to all absolutives—rather only to those appearing in intransitive clauses. In consequence, one may wonder whether the opposition primary term:secondary term breaks down with respect to these rules.

The important thing to consider is that only primary terms may appear in intransitive clauses. Since the position in an intransitive clause is the point of neutralization of the opposition primary term:se-

condary term, the primary term in this position may have the syntactic function of a primary term, of a secondary term, or of both. So, three possibilities are open: 1) primary terms in intransitive clauses are identified only with primary terms in transitive clauses; 2) primary terms in intransitive clauses are identified only with secondary terms in transitive clauses; 3) primary terms in intransitive clauses are identified both with primary and secondary terms in transitive clauses. All these possibilities are realized in ergative languages: 1) the syntactic rules in question are stated with reference to only absolutives in intransitive and transitive clauses (Dyirbal); 2) the syntactic rules in question are stated with reference to absolutives in intransitive clauses and ergatives in transitive clauses (Georgian); 3) the syntactic rules in question are stated with reference to absolutives in intransitive clauses and to absolutives and ergatives in transitive clauses (Archi, a Daghestan language; Kibrik, 1979: 71-72).

The Law of Duality is valid in phonology, as well. Consider, for instance, the opposition d:t in Russian and the opposition d:t in Danish. On the surface both these oppositions are the same. But, as a matter of fact, the Russian d:t is a case of the opposition Voiced: Voiceless and the Danish d:t is a case of the opposition Lax:Tense.

In Danish the neutralization of the opposition d:t results in d which may represent either d or t. So, d is neutral-negative (unmarked) member of the opposition d:t and t is positive (marked) member of this opposition. This may be represented by the diagram:

In Russian the neutralization of the opposition d:t results in t which may represent either d or t. So, t is a neutral-negative (unmarked) member of the opposition d:t and d is a positive (marked) member of this opposition. This may be represented by the diagram:

We come up with the opposition unmarked term:marked term in phonology. On the basis of this opposition we establish the following correspondence between members of the oppositions Lax:Tense and Voiced:Voiceless.

Opposition of markedness	Lax:Tense	Voiced:Voiceless
Unmarked phoneme	d	t
Marked phoneme	t	d

Now we can apply the Law of Duality in Phonology:

The marked term of the opposition Lax:Tense corresponds to the unmarked term of the opposition Voiced:Voiceless, and the unmarked term of the opposition Lax:Tense corresponds to the marked term of the opposition Voiced:Voiceless; and, vice versa, the marked term of the opposition Voiced:Voiceless corresponds to the unmarked term of the opposition Lax:Tense and the unmarked term of the opposition Voiced:Voiceless corresponds to the marked term of the opposition Lax:Tense.

The Correspondence Hypothesis and the Law of Duality are inconsistent with theories of universal grammar which take 'subject' and 'ob-

ject' as primitive universal notions. They require for their comprehension a more abstract theoretical framework which treats 'subject' and 'object' as notions with a restricted scope of application rather than as universal notions. Such a theoretical framework is provided by AG.

5. Cross-linguistic Generalizations and Coding Devices

In conclusion, I will consider the relation of syntactic functions ergative and absolutive to morphology.

I propose a broad notion of morphology which covers any coding devices of a language, including word order. I define morphology as the system of coding devices of a language.

Ergative processes may be found in languages which do not have ergative morphology, that is they are not distinguished by coding devices. For example, as far as nominalizations are concerned, Russian, an accusative language, has an ergative system: genitive functions as an absolutive and instrumental functions as an ergative (Comrie, 1978: 375-376). In French and Turkish, both accusative languages, there are causative constructions which are formed on ergative principles (Comrie, 1976: 262-263); in French there are antipassive constructions (Postal, 1977).

Can ergative processes not distinguished by coding devices be considered distinct formal processes?

I do not think so. A language is a sign system. But in a sign system signata cannot exist without signantia, that is without distinct coding devices. True, any natural language is a very complex sign system

in which there is no one-one correspondence between signantia and signata. Rather, one signans may correspond to many signata, and, vice versa, one signatum may correspond to many signantia. But for sign systems the following general semiotic law may be formulated which I call the Law of Identification of the Classes of Signata:

> Different signata belong in the same class if they are not distinguished from one another by at least one distinct coding rule.

In conformity with this semiotic law I propose the concept of the grammatical category defined as follows:

> A grammatical category is a class of grammatical signata that are not distinguished from one another by at least one distinct coding rule.

In studying natural languages one may discover various linguistic relations. But if given linguistic relations are not distinguished from one another by at least one distinct coding rule, they belong in the same grammatical category.

Under the proposed definition of the grammatical category, ergativity can constitute a distinct grammatical category in a given language only if it is distinguished from other relations by at least one distinct coding rule.

In order to make my case concrete, I will consider ergativity in Russian. Comrie claims that "as far as nominalizations are concerned, Russian has in effect an ergative system" (Comrie, 1978: 376). This claim is based on the following data.

In Russian passive constructions can be nominalized. For example, we may have:

(22) a. Gorod razrušen vragom.
city has-been-destroyed enemy-by
"The city has been destroyed by the enemy."

b. razrušenie goroda vragom
destruction city-of enemy-by
"the city's destruction by the enemy"

(22b) is a nominalization of (22a).

In (22b) genitive goroda denotes a patient and instrumental vragom denotes an agent, and the verbal noun razrušenie corresponds to a transitive predicate. This nominal construction correlates with a nominal construction in which a verbal noun corresponds to an intransitive predicate and genitive denotes an agent, for example

(23) priezd vraga
arrival enemy-of
"the enemy's arrival"

If we compare (22b) with (23), we can see that the patient in (22b) and the agent in (23) stand in the genitive (functioning as an absolutive) while the agent in (22b) stands in the instrumental (functioning as an ergative). Therefore we may conclude that in Russian nominalizations involve ergativity.

Does ergativity constitute a distinct grammatical category in Russian nominal constructions?

Consider the following example of nominalization in Russian:

(24) a. Ivan prenebregaet zanjatijami
John neglects studies
"John neglects studies"

b. Prenebreženie Ivana zanjatijami
Neglect John(gen) studies(instr)
"John's neglect of studies"

The surface structure of (24b) is the same as the surface structure of (22b), but instrumental zanjatijami denotes a patient rather than an agent and genitive Ivana denotes an agent rather than a patient. In this instance of nominalization instrumental zanjatijami functions as an object and genitive Ivana functions as a subject.

It is not difficult to find more examples of nominalization in which instrumentals denote patients rather than agents and genitives denote agents rather than patients. This type of nominalization occurs in a large class of verbs that take an object in the instrumental, like rukovodit' "to guide", upravljat' "to manage", torgovat' "to sell", etc.

All these examples show that Russian does not use any coding devices to make ergativity a distinct grammatical category in nominal constructions. True, ergativity differs from other relations denoted by the instrumental in Russian nominal constructions. But, since ergativity is not distinguished from other relations in the opposition instrumental: genitive by at least one coding rule, ergativity does not constitute a distinct grammatical category and is simply a member of the class of relations denoted by the instrumental in Russian nominal constructions.

The above consequence is of paramount importance for typological research: with respect to ergativity, only those syntactic processes are typologically significant which are reflected by morphological processes.

Here are some phenomena which are typologically significant for the study of ergative processes: relativization, split ergativity, extrac-

tion rules (called so because they extract a constituent from its position and move it some other position; the term 'extraction rules' covers WH-Question, relativization and focus), antipassives, possessives.

The important thing to note is that the ergative processes connected with these phenomena have no counterparts in accusative languages; they characterize only different types of ergative languages.

In making cross-linguistic generalizations concerning ergativity we have to look for coding devices which distinguish ergativity from other grammatical categories. Cross-linguistic generalizations which would not take into account coding devices would lose their usefuleness as a classification of language types.

6. Concluding Remarks

The ultimate test of a linguistic theory is the extent to which it makes linguistic phenomena intelligible.

What is a linguistic phenomenon?

In making cross-linguistic generalizations, a linguist may run into facts that do not fit in the conceptual framework in terms of which cross-linguistic generalizations are stated. These facts do not make sense, they are considered anomalous. The anomalous facts are important for the linguist. The linguist must be on the look-out for the anomalous facts because they make it necessary for him to trim and shape his ideas further, so that within the reshaped conceptual framework the anomalous facts may become intelligible and cease to be anomalous. So long

as everything proceeds according to his prior expectations the linguist has no opportunity to improve on his linguistic theory. The improvements on a linguistic theory result from the search for the explanations of anomalous facts.

The statement about the importance of anomalous facts for improvements on linguistic theories needs to be qualified. Not all anomalies are equally important for a linguistic theory. For instance, irregular plurals in English, such as mice from mouse are anomalous, but they are not crucial for a theory of English grammar: these facts belong in the lexicon. Only if significant anomaly can be demonstrated, then there will be a genuine theoretical issue to face.

A fact that is a significant anomaly for a given linguistic theory I call a linguistic phenomenon.

It follows from the definition of the linguistic phenomenon that this concept is relative to a given theory. A fact that is anomalous from the standpoint of one theory may be regular from the standpoint of another theory.

To explain a linguistic phenomenon is to subsume it under a conceptual framework from whose point of view it ceases to be anomalous and is considered regular.

In testing a linguistic theory it is important to find out whether this theory can make sense of linguistic phenomena that there is no way of accounting for by use of the currently accepted linguistic theories. It is important to see whether the new theory accounts for all of the phenomena which motivated the currently accepted theories and, in addition, for all those phenomena that contravene these theories.

Ergative languages are a rich source of significant anomalies for linguistic theories which use the concept of the subject and the object as universal concepts.

No matter how well these theories fit the accusative languages, they run into difficulties when applied to the ergative languages.

There are two ways of solving these difficulties: either to demonstrate that ergative languages have the same syntactic structure as accusative languages, or, if this cannot be done and rather the opposite can be demonstrated, to abandon the notions of the subject and the object as universal concepts and develop a new conceptual framework.

In the present paper I tried to demonstrate that ergative vs. accusative is a fundamental typological syntactic dichotomy. This view opposes theories which claim that from a syntactic standpoint ergative languages are organized in the same way as accusative languages. The nature and dimensions of this dichotomy can be explained and understood properly only by relating the ergative system and accusative system to a more abstract underlying system which is presented in AG.

AG claims that ergative and absolutive cannot be defined in terms of subject and object but rather must be distinct primitive syntactic functions, and therefore subject and object cannot be considered valid universal concepts. Both series of concepts must be related to a more abstract series of concepts defined in terms of the relation operator:operand.

REFERENCES

1. Anderson, S.R. (1976). 'On the Notion of Subject in Ergative Languages'. In Li, C.N. (ed.).
2. Churchward, C.M. (1953). Tongan Grammar. London: Oxford University Press.
3. Comrie, B. (1976). 'The Syntax and Semantics in Causative Constructions: Crosslanguage Similarities and Divergences'. In Shibatani, M. (ed.), pp. 261-312.
4. Comrie, B. (1978). 'Ergativity'. In Lehman, W.P. (ed.).
5. Dixon, R.M.W. (1972). The Dyirbal Language of North Queensland. Cambridge: University Press.
6. Johnson, D.E. (1976). 'Ergativity and Universal Grammar'. To appear in Studies in Relational Grammar. Perlmutter, D.M. (ed.).
7. Johnson, D.E. and Postal, P.M. (1980). Arc Pair Grammar. Princeton, New Jersey: Princeton University Press.
8. Keenan, E.L. (1976). 'Towards a Universal Definition of "Subject"'. In Li, C.N. (ed.).
9. Keenan, E.L. and Comrie, B. (1977). 'Noun Phrase Accessibility and Universal Grammar'. Linguistic Inquiry 8, pp. 63-99.
10. Kibrik, A.E. (1977). 'Canonical Ergativity and Daghestan Languages'. In Plank, F. (ed.).
11. Larsen, T.W. and Norman, W.M. (1979). 'Correlates of Ergativity in Mayan Grammar'. In Plank, F. (ed.).
12. Lehman, W.P. (ed.) (1978). Syntactic Typology: Studies in the Phenomenology of Language. Austin: University of Texas Press.

13. Li, C.N. (ed.) (1976). Subject and Topic. New York and London: Academic Press.

14. Martinet, A. (1975). Studies in Functional Syntax. Munchen: Wilhelm Fink Verlag.

15. Perlmutter, D.M. and Postal, P.M. (1977). 'Towards a Universal Characterization of Passivization'. Proceedings of the Third Annual Meeting of the Berkeley Linguistic Society.

16. Plank, F. (ed.) (1979). Ergativity. Towards a Theory of Grammatical Relations. London and New York: Academic Press.

17. Postal, P.M. (1977). 'Antipassive in French'. NELS 7, pp. 273-313.

18. Shaumyan, S.K. (1977). Applicational Grammar as a Semantic Theory of Natural Language. Chicago: University of Chicago Press.

19. Shibatani, M. (ed.) (1976). Syntax and Semantics 6. New York and London: Academic Press.