SETTING THE ERGATIVE PARAMETER

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1. The Acquisition of Grammatical Relations

Any child acquiring English is faced with the task of working out the proper expression of the grammatical relations of subject and object. Only a knowledge of grammatical relations, not thematic relations, will allow the child to:
1. use the proper word order - subject verb object, as in the sentence "Mary was noticed by John" where Mary is the subject despite the fact that she has the thematic role of stimulus.
2. mark subject-verb agreement appropriately.
3. learn the rule of subject-auxiliary inversion.
4. learn the control relations between different clauses, as in the sentence "Jennifer came to see Paul."

A number of authors (Culicover & Wilkins 1986, Lyons 1977, Macnamara 1972, O'Grady 1987, Pinker 1984) have assumed a direct correspondence between semantic and syntactic roles in order to explain the child's initial acquisition of grammatical relations. The Semantic Bootstrapping Hypothesis, as this theory has come to be known, assumes that children begin their acquisition of syntactic relations by equating the subject of a sentence with the Agent. The Semantic Bootstrapping Hypothesis differs from previous semantically based acquisition theories in assuming that children only rely on semantic relations to establish the initial syntactic structure for their language. Once this structure has been established, children can rely on distributional evidence to decide on the syntactic structure for sentences without clearcut semantic relations, e.g. 'I love you'.

Obviously, in order for Semantic Bootstrapping to succeed, the correspondence between semantic and syntactic relations must be the same in all languages. The strongest version of this hypothesis was proposed by Perlmutter & Postal (1984). Their Universal Alignment Hypothesis states that one can predict the initial grammatical relation of each nominal in a clause on the basis of the semantic representation of the clause. If the Universal Alignment Hypothesis was

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correct then children would have little difficulty at
all in establishing grammatical relations by semantic
bootstrapping. The question I wish to address in this
paper is whether Universal Alignment holds in every
language. I will approach this question by examining
the notion of ergativity.

2. *Ergativity*

Traditionally, an ergative language is defined as
a language in which the subject of an intransitive verb
is treated in the same way as the object of a
transitive verb (see Dixon 1979). There is thus a
distinction between the subject of transitive verbs and
the subject of intransitive verbs. An example of this
distinction is shown in (1) which contrasts the
ergative person marking system of the Mayan language
Quiche with the accusative system of English.

(1) Accusative   Ergative

   English   He came   Quiche   x-0-pet-ik
                            Asp-3Abs-come-term.

         I saw him   x-0-inw-il-oh
                            Asp-3Abs-1Erg-see-term.

The subject of both transitive and intransitive
verbs in accusative languages takes a nominative marker
(either a case marker on the noun or a subject marker
on the verb). Only the subject of transitive verbs in
ergative languages has an ergative marker. The subject
of intransitive verbs and the object of transitive
verbs have an absolutive marker. In accusative   .
languages only the object of transitive verbs receives
the accusative marker.

On the surface, the contrast between accusative
and ergative languages presents the child with the
simple problem of determining the function of the case
or person markers in the language. It raises the
question of whether a child acquiring an ergative
language might first assume that the language is really
accusative and thus overextend the ergative marker to
the subject of intransitive verbs. This would seem to
be especially likely given the prominence of the notion
of subject in Universal Grammar. What would be more
natural than learning that a particular marker refers
to the subject of prototypical manipulative activities
and extending that same marker to all subjects? No

existing theory predicts that children would not
overextend the subject marker.

The trouble with such a learning procedure is that
data from children acquiring ergative languages does
not contain the predicted overextensions. Quiche, for
example, has three sets of subject markers shown in
(2). The choice between the two ergative sets is
conditioned by the initial phoneme of the verb root. A
child learning Quiche would have to distinguish between
both transitive and intransitive verbs and between the
allomorphic variants of the ergative set in order to
use the subject markers successfully. Any confusion
would be quite evident - particularly if the child used
a prevocalic allomorph of the ergative set with an
intransitive stem. The homonymy between the first
person forms increases the likelihood that children
would confuse the ergative and absolutive subject
markers.

(2)   Ergative   Absolutive

        Prevocalic   Preconsonantal

1   inw-   in-   in-
2   aw-   a-   at-
3   r-   u-   0-
4   q-   qa-   uj-
5   iw-   i-   ix-
6   k   ki-   e-

Tables 1 and 2 provide Quiche data on the
acquisition of subject markers (see also Schiefflin
1985). In Table 1, an overextension of an ergative
marker to an intransitive verb was considered an error
in the use of the ergative marker. The overextension
of an absolutive marker to a transitive verb was
counted as an absolutive error. I counted any
appearance of a pronoun before the verb as a person
marker. In particular, I did not try to distinguish
between cases in which the child used a pronoun in
preverbal position to emphasize the referent. Since
the pronouns are identical in form to the absolutive
set of person markers, the result appears as an error
in the use of the intransitive person markers. I am
fairly confident that the children did not intend to
use these forms as person markers since there is often
a pause between them and the verb, something that never
occurs with person markers on the verb. Al Cha:y, in
fact, prefaced some of these pronouns with the word kol
'as for ___,' which frequently accompanies the emphatic

pronouns in adult Quiche. Emphatic pronouns account
for 6 of the 7 errors for Al Tiya:n and Al Cha:y.

Table 1. Overextensions of subject markers
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              Al Tiya:n   Al Cha:y   A Carlos

Session   Abs   Erg   Abs   Erg   Abs   Erg

  1-3   -   -   -   -   -   -
  4-6   -   -   2   1   -   -
  7-9   -   -   1   -   -   5
 10-12   -   -   2   -   -   1
 13-15   1   -   -   -   -   1

        As Table 1 shows, the children only made a small
number of errors. There are two possible explanations
for this pattern of overgeneralizations. The first is
that the children did not, in fact, overgeneralize the
person markers. If this were the case, I would need
some explanation for the errors in Table 1. One
explanation is the confusion of emphatic pronouns with
the person markers. Another explanation would be an
improper interpretation of the children's segmentation
errors. A Carlos' production in C18, a xa toq'ik,
could be interpreted as an overgeneralization of the
person marker or a simple missegmentation. This would
still leave a few cases that appear to be genuine
overextensions. Two occurred in Al Cha:y's sessions 19
and 23. In session 23 she wanted me to spin her
around, but used the transitive first person plural
subject marker qa- with an intransitive verb form -
sutinik 'spin'. She might of meant to use the
transitive form -suti:j or the causative -sutinisa:j
which she had used just before. Appendix A presents
all of the overgeneralizations I was able to find in
the Quiche data.

        A second interpretation of these results would be
that the children had not reached a stage where
frequent overgeneralizations would be expected. Ingram
(in press) reviewed the data on overgeneralization in
Cazden (1968) and found that Adam, Eve and Sarah did
not really begin to overgeneralize the plural to
irregular nouns until they had begun using it in over
90% of its obligatory contexts. As Table 2 shows Al
Tiya:n and Al Cha:y had not begun to use the person
markers in even a quarter of their obligatory contexts
while A Carlos only supplied the person markers in half
of their obligatory contexts. Table 1 further suggests
(if the emphatic pronoun interpretation is correct)

that Quiche children start extending the ergative
person markers to intransitive verbs when they are
using the person markers in half of their obligatory
contexts.

Table 2. Percentage presence of subject markers on
   Quiche verbs
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	Al Tiya:n				Al Cha:y				A Carlos			
	Ivs		Tvs		Ivs		Tvs		Ivs		Tvs	
Session	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1-3	6	86	9	39	–	–	3	2	19	50	17	71
4-6	3	50	5	11	9	39	10	4	20	67	63	50
7-9	4	31	6	10	5	22	12	6	32	58	128	46
10-12	6	38	19	17	3	7	48	16	17	65	152	54
13-15	4	10	25	19	2	9	51	18	31	70	130	51

     There are two problems that I see with the second
interpretation. I have listed all of the children's
overgeneralizations in Appendix A, including those from
Al Cha:y's and A Carlos' later transcripts. These do
not show any marked increases in the number of
overgeneralizations that the second interpretation
would predict. This is dispite that fact that Al
Cha:y's and A Carlos' use of several of the person
markers has reached 90% presence. The second problem
is that A Carlos' overgeneralizations in his eighth
transcript occur with an antipassive form of a verb
that is usually transitive. This error could be
interpreted as either an overgeneralization of the
ergative person marker or a failure to distinguish
between the active and antipassive forms of the verb.

     Considering these problems in data interpretation,
I tentatively conclude that the children did not
produce a significant number of overgeneralizations.
It therefore seems advisable to alter the simple
learning procedure I described above to consider both
subject marking and transitivity simultaneously.
Procedures described in Bowerman (1985) and Pinker
(1984) do just this. Children could start by learning
the markers for the subject and object of transitive
verbs and look for evidence from the input in order to
determine the correct marking for intransitive
subjects. On the other hand they could begin by
learning how their language marks the subjects of
intransitive verbs and check the input to see whether
this marker is similar to that of the subject or object
of transitive verbs.

Either procedure predicts an initial asymmetry in children's use of subject markers. In the first version, they should first use the markers with the subjects of transitive verbs, whereas in the second version, they should first use the markers with the subjects of intransitive verbs. Rather than overextending the subject marker as the first procedure predicts, they should underextend the subject marker in the second procedure. Unfortunately, there is no sign of such an asymmetry in the acquisition data. As Table 2 shows, Quiche children produce the subject markers of transitive and intransitive verbs at about the same rate. Bowerman (1985) discusses other evidence which suggests that children do not underextend subject markers in the way the second procedure would predict. Thus, the first two learning procedures both seem to be at odds with the acquisition data.
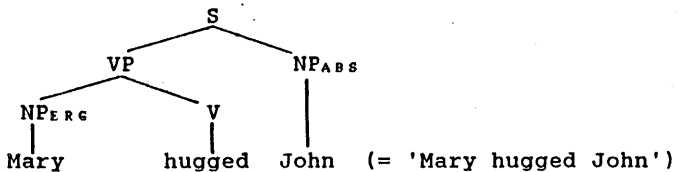
Of course, it is easy to fix the procedure so that it accords with the acquisition data. It only requires that children distinguish between the subjects of transitive and intransitive verbs from the beginning and then check the input to see which marker each of these subjects requires. Once a child distinguishes a marker for the subject of a transitive verb s/he will use it exclusively for the subjects of transitive verbs. Once the child distinguishes a subject marker for intransitive verbs, s/he will use it exclusively to mark the subjects of intransitive verbs. As soon as the child notices the similarity between the subject markers (if the language is accusative) the child can merge the two categories into one - the subject marker of the verb.

While this procedure is not contradicted by the acquisition data I do not believe it "explains" the data either. For example, this procedure predicts that children acquiring accusative languages would initially distinguish between the nominative NPs of transitive and intransitive verbs. I do not know of any evidence that children make such a distinction, and yet such evidence is needed to confirm this procedure. The lack of evidence can be explained away by assuming that the period during which children make the distinction would not last more than a few days, but this weakens the theory by undermining the only way of testing it.

3. Syntactic Ergativity

Another potential prediction of this procedure is that children learning ergative languages would merge the subject of intransitive verbs with the object of transitive verbs to create a new category – the subject of the verb. In this case the ergatively marked noun phrase would be the object (as in (3)). There is nothing in the procedure per se that would rule out category merger for ergative languages.

(3) Ergative NP as object

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                       S
                      / \
             VP           NPᴀʙꜱ
            /  \            |
       NPₑ ᵣ ɢ     V        |
         |       |         |
       Mary    hugged    John    (= 'Mary hugged John')
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In fact, the structure in (3) has been proposed as the underlying structure in syntactically ergative languages. The structure in (3) conforms to the traditional "passive" interpretation of ergative constructions since the mapping between semantic and syntactic roles is similar to that of the passive in accusative languages (cf. Gabelentz 1860, Hale 1970). Marantz (1984) adopted this structure as the basis for his Ergativity Hypothesis (Woodbury 1977 proposes the same correspondence). Marantz sets up an ergative parameter which distinguishes between the semantic – syntactic correspondences of ergative and accusative languages, as in (4).

(4) Marantz's ergative parameter

Accusative	Ergative
subject – agent	subject – patient
object – patient	object – agent

As Plank (1979) points out in his insightful discussion, any exploration of the nature of ergativity presupposes an independent framework of semantic and syntactic roles. Since none is presently available, I shall simply assume a basic set of semantic roles and limit my discussion to the identification of the syntactic subject. Keenan (1976) provides a useful list of subject properties from which it is possible to

predict how the subject of a syntactically ergative
language will behave.

Three of Keenan's tests are not applicable in many
languages. Passivization is not a diagnostic of
subjecthood because ergative languages have an
antipassive rule which changes the ergative NP to an
absolutive. This means it is impossible to tell
whether ergative languages have a "passive" rule which
is a mirror image of the passive in accusative
languages, or whether ergative languages just have
another type of advancement rule that is distinct from
the usual passive. The linear order test is defeated
by languages such as Quiche which have VOS word orders
(cf. Pullum 1977). Finally, many languages do not have
verbal equivalents of such verbs as <u>seem</u> or <u>appear</u>.
Instead, these concepts may be translated as verb
particles.

This still leaves a number of tests which may be
used to distinguish the syntactic subject in any given
language. Of these, control properties have become
something of a standard test. In a typical example,
Henry is assumed to be the subject of the embedded verb
<u>make</u> in (5a). In (5b) Jennifer controls the subject of
the embedded verb and she is interpreted as the subject
of <u>make</u>. In both of these sentences it is the subject
of the embedded verb that is controlled by an NP in the
matrix clause. When control of an object NP is
attempted, as in (5c), the result is ungrammatical.

(5a.)   Henry wants to make it.
 (b.)   Henry wants Jennifer to make it.
 (c.) * Henry wants Jennifer to make 0.

In a syntactically ergative language the
absolutive NP should be controlled since it is the
subject. This is exactly what occurs in Yup'ik Eskimo
(Reed et al. 1977, cited in Levin 1983). Yup'ik has a
set of verbal postbases which correspond to English
verbs with control complements. The verb to which the
postbase is suffixed is understood as an embedded verb.
The Yup'ik postbases are transitive; the controller is
the absolutive argument of the postbase. Levin (127,
example 3.59) cites the following example from Reed et
al. as evidence that the absolutive NP in Yup'ik is
controlled. In (6) the absolutive argument <u>qimugta</u> is
interpreted as the one taken rather than the taker.

(6) Anucetaa   qimugta.
     take outside-let-INDIC-3s/3s dog-ABS
     He lets the dog be taken outside

     The Australian aboriginal language Dyirbal also
has this property. Levin (262, example 5.58) cites the
Dyirbal purposive complement clause as evidence. In
(7) the absolutive argument payl yara is the one
pointed out, not the one doing the pointing. In
ergative terms, the unexpressed subject of the embedded
purposive clause is interpreted as the subject of the
matrix clause.

(7) payl   yara waynyjin   yalu
     There-A man-A go uphill-NFUT to here
     Man came uphill towards here,

     pangkun tuntungku manjali
     there-E bird-E point out-PURP
     resulting in bird's pointing out his presence

4. The Acquisition of Ergative Languages

     The existence of languages with syntactic
ergativity raises a difficult problem for present
accounts of the acquisition of verb argument structure.
Remember, such theories assume a simple correspondence
between thematic and syntactic roles for at least a set
of prototypical verbs. Semantic bootstrapping would
lead children to exactly the wrong conclusion for
languages such as Yup'ik and Dyirbal where the
correspondence is the reverse of accusative languages.
When exposed to simple sentences such as "Henry-erg
hugged Jennifer-abs" the child would simply assume that
Henry was the subject. This assumption would receive
massive confirmation from the other simple, active
sentences in the child's input so that the "subject =
ergative" rule would become well entrenched in the
child's grammar.

     This, in turn, would lead to a number of errors in
the child's later grammatical development. Dyirbal
children would be unable to interpret such sentences as
"Woman-abs laughed man-erg see-Purposive" (Dixon
1980:458). The children would produce ungrammatical
sentences with conjoined clauses, such as "The man-abs
went downhill and saw the dog-abs" (Dixon 462). They
would form passive sentences such as "Jennifer-erg was
hugged." They would be more likely to form questions
such as "Who is calling?" rather than "Who is being

called?"   Finally, the children would interpret
reflexive sentences as passive rather than active.   In
short, there should be an enormous amount of evidence
that children acquiring ergative languages had picked
the wrong noun phrase as subject.

        The Semantic Bootstrapping Hypothesis could be
saved if children had some way to set the ergative
parameter.   Interestingly, children can not rely upon
the language's morphology to determine whether or not
the language was syntactically ergative.   Quiche, with
its perfectly ergative morphology is syntactically
accusative whereas Dyirbal has accusative morphology
for the first and second persons and yet is
syntactically ergative.

        This means that children acquiring a syntactically
ergative language would have to start by assuming the
language was accusative and then find some way of
correcting their mistake.   However, it is difficult to
see how a child would be able to identify the nature of
the error, let alone correct it.   When a Dyirbal child
understood a sentence with a purposive clause (e.g.
"Woman-abs laughed man-erg see-Purposive"), s/he might
interpret the purposive inflection as a type of
passivizing morpheme.   This would actually allow two
possible interpretations, e.g. "The woman laughed and
was seen by the man" or "The woman laughed to see the
man."   The children could reject the latter
interpretation on the basis of the nonlinguistic
context which would presumably show that the man saw
the woman and not the other way around.   The former
interpretation would save the rule that subjects of
embedded clauses are controlled, but miss the fact that
the absolutive NP is the subject of an active clause,
not a passive one.

        If the child realized that the embedded sentence
was active rather than passive, he might succeed in
interpreting the sentence as "The woman's laughing
caused the man to see PRO."   Since PRO cannot have a
governing category, and since the last interpretation
implies that the embedded verb governs PRO the child
would have strong evidence that his grammatical
structure was fundamentally flawed.   However, the
correction would require a wholesale restructuring of
the child's phrase structure rules.   Since the old
rules would be strengthened each time the child
correctly interpreted a simple sentence, they would be
extremely resistant to change on the basis of a few
complex sentences.

It is hard to escape the conclusion that children
do not have any reliable evidence for setting the
ergative parameter. This has the unfortunate
implication that children do not really acquire a
syntactic relation like subject in an all or none
fashion assumed in much of the acquisition literature.
There may, in fact, be no alternative to discovering
which nps function together syntactically across a
number of different structures in any particular
language. Children may have to work out for themselves
what the actual features of subjects in their language
are.

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APPENDIX A

Person Marker Overgeneralizations

Al Tiya:n

S14-3   at-pisoj   (at a-piso:m)   "You have wrapped it."

Al Cha:y

R6-2   x-i-7ek   (x-in-7ek)   "I went."
 -53   no uj tij b'ik   (ka-qa-tij)   "We eat it!"
 -59   at, tij e b'inka (k-a-tij)   "You eat it."
R8-57   at tej   (ch-a-qatej)
R11-34 kol at chap taj   (k-a-chap¡   "You're grabbing it."
R12-1   kal at koj   (k-a-kojoh)   "You're using it."
R16-14 j-a chupa:m   (j-at)   "Go inside!"
R18-23 puta parex k-0-anoh (k-u-7anoh)   "He's doing it."
R23-20 no7 qa-xutanik   (k-uj-sutinik)   "Let's spin."
 -21   qu-xutanik   "   "

A Carlos

C7-13 (twice)   a-kula   (ch-at-kula)   "Come!"
C8-13 (twice)   at a7a-yowik (x-at-yowik) "You gave s.t."
 -20   at e-yowik   "   "
C12-40 u-stinik   (ka-0-sutinik)   "It's spinning."
C15-43 a-koti7ik   (k-at-kote7ik)
C17-24 x-0-iloh   (x-r-iloh)   "He saw it."
 -43   x-ix-loq' wih   (x-i-loq')   "You all bought it."
C18-29 a xa toq'ik   (a x-at-oq'ik)   "Did you cry?"