Argument Encoding

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Contents

Chapter 1

Introduction

1. Introduction

2. Topic

The main question that we will address is how the core patterns of accusative vs. ergative encoding of arguments (via case or agreement) are to be captured by syntactic theory.

(1) *Primary arguments:* EXT(ERNAL) *vs.* INT(ERNAL):

a.	<u>He</u> is working	(he: EXT)
	<u>Er</u> hat gearbeitet	(er: EXT)
b.	<u>He</u> has arrived	(he: INT)
	<u>Er</u> ist angekommen	(er: INT)
c.	<u>She</u> kissed <u>him</u>	(she: EXT, him: INT)
	<u>Sie</u> hat <u>ihn</u> geküsst	(sie: EXT, ihn: INT)

3. Arguments in the Grammar

Arguments show up in four domains of grammar:

- Argument structure
- Argument realization
- *Argument encoding*
- Argument interpretation

4. Argument Structure

Assumption:
The lexicon entries of the verbs in (1) involve (simplified) semantic forms as in (2).

Argument structures determine Θ-grids (via λ prefixation). Θ-roles are discharged by λ conversion (= Merge of Chomsky (1995, 2001)), from left to right.

(2) *Argument structures* (Bierwisch (1988), Wunderlich (1997), Heim & Kratzer (1998)):

a. /work/: $\lambda\underline{x}$ [x WORKS]
b. /arrive/: λx [x ARRIVES]
c. /kiss/: $\underbrace{\lambda y \,[\, \lambda\underline{x}}_{\Theta-Raster}$ [x KISSES y]]

Convention:
The external Θ-role is underlined (Williams (1981)).

5. Argument Structure

1. A standard alternative to the system in (2) relies on (a) Θ-grids as simple hierarchies of Θ-roles (see Chomsky (1981)).

(3) /kiss/:

$\underline{x}$	y
AGENT	PATIENT

2. There are many other theories of argument structure around; see, e.g, Reinhart (2003), Borer (2004).

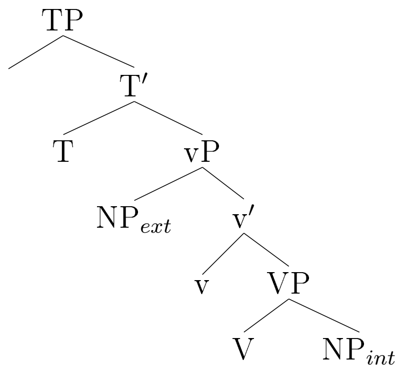
6. Argument Realization

From lexicon to syntax:
An argument bearing an internal Θ-role is merged within VP in the syntax, an argument bearing an external Θ-role is merged outside of VP in the syntax: it is merged as the specifier of a functional projection vP.

- The fact that such a mapping preserves the order relations among arguments comes for free in the approach adopted here; it can only be derived by additional linking rules in Chomsky' (1981) approach. In the present approach, only the fact that an external argument is realized outside of vP must be stipulated.

7. Argument Realization

(4) *Projection of arguments*:



8. Systems of Argument Encoding

Two parameters for the encoding of arguments by markers:
(i) nominative/accusative marking vs. ergative/absolutive marking
(Comrie (1989), Dixon (1994), Plank (1995))
(ii) dependent-marking vs. head-marking (Nichols (1986))

Table 1: Accusative marking vs. ergative marking

accusative pattern		ergative pattern	
NP$_{ext}$-V$_i$	NP$_{int}$-V$_i$	NP$_{ext}$-V$_i$	NP$_{int}$-V$_i$
NP$_{ext}$-V$_t$	NP$_{int}$-V$_t$	NP$_{ext}$-V$_t$	NP$_{int}$-V$_t$
nom	acc	erg	abs

Terminology:
• V$_i$ = intransitive verb
• V$_t$ = transitive verb
• DP$_{ext}$ = external argument DP
• DP$_{int}$ = internal argument DP

9. Systems of Argument Encoding

Note on terminology:

- The notation here follows Plank (1995).
- Comrie's (1989) system:

(5) a. NP$_{ext}$-V$_i$, NP$_{int}$-V$_i$ = S
b. NP$_{ext}$-V$_t$ = A

c. NP_{int}-V_t = P

- Dixon's (1994) system:

(6) a. NP_{ext}-V_i, NP_{int}-V_i = S
b. NP_{ext}-V_t = A
c. NP_{int}-V_t = O

10. Dependent-Marking vs. Head-Marking

(7) *Dependent-marking vs. head-marking*:
NP-marker V | NP marker-V

- Argument encoding can proceed by case-marking on the DP argument ('dependent-marking') or by agreement-marking on the verb ('head-marking'); see Nichols (1986), Baker (1996). This difference is often taken to be orthogonal to the choice of encoding pattern. Accordingly, notions like 'accusative', 'nominative', 'ergative', and 'absolutive' are sometimes used indiscriminately for case- and agreement-marking (see, e.g., Bickel & Nichols (2001)). CASE is a possible cover term for both.

11. Dependent-Marking vs. Head-Marking

Table 2: Language types

Icelandic	nominative/accusative marking	dependent marking
Archi	ergative/absolutive marking	dependent marking
Navajo	nominative/accusative marking	head marking
Sierra Popoluca	ergative/absolutive marking	head marking

12. Language Types

13. Icelandic 1

Indoeuropean, Iceland; speakers < 250.000.
Ref.: Andrews (1982), Kress (1982), Sigurðsson (1989, 2002a), Thráinsson (1994), Taraldsen (1995)

Generalization:
Icelandic employs an accusative case-marking pattern (plus head-marking for nominative: agreement).

14. Icelandic 2

(8) *Intransitive verbs in Icelandic*:

a. Sól-Ø=in skín-Ø
sun-SG.NOM=DET.SG.FEM.NOM shine-3.SG
'The sun shines.' (Kress (1982, 263))

b. Ólaf-ur byrja-ð-i of sein-t
Olaf-SG.NOM begin-PAST-3.SG too late-3.SG.NEUT
'Olaf began too late.'

(9) *Transitive verbs in Icelandic*:

Ólaf-ur las-Ø bók-Ø=ina
Olaf-SG.NOM read.PAST-3.SG book-SG.ACC=DET.SG.FEM.ACC

'Olaf read the book.' (Sigurðsson (2002b, 698))

15. Archi 1

North Caucasian language, Russia (Daghestan); speakers < 1000
Ref.: Kibrik (1979, 1991, 2003), Mel'čuk (1999), Plank (1999)

Generalization:
Archi employs an ergative case-marking pattern (plus head-marking for absolutive: agreement – I-III: noun classes; case markers bear number information).

16. Archi 2

(10) *Intransitive verbs in Archi*:

a. Dija-Ø w-ir$\bar{\text{x}}_{\circ}$in
father:I.SG-ABS I.SG-work

b. Buwa-Ø d-ir$\bar{\text{x}}_{\circ}$in
mother:II.SG-ABS II.SG-work
'Father/mother is working.'

c. Dija-Ø w-arxar-ši w-i
father:I.SG-ABS I.SG-lie-GER I.SG-Aux

d. Buwa-Ø d-arxar-ši d-i
mother:II.SG-ABS II.SG-lie-GER I.SG-Aux
'Father/mother is lying.' (Kibrik (1979, 67))

17. Archi 3

(11) *Transitive verbs in Archi*:

a. Dija-mu x̄$_{\circ}$alli-Ø b-ar-ši b-i
father:I.SG-ERG bread:III.SG-ABS III.SG-bake-GER III.SG-Aux

b. Buwa-mu x̄$_{\circ}$alli-Ø b-ar-ši b-i
mother:II.SG-ERG bread:III.SG-ABS III.SG-bake-GER III.SG-Aux
'Father/mother is baking the bread.' (Kibrik (1979, 67))

18. Navajo 1

Athabaskan language, USA (Arizona, New Mexico, Utah); speakers < 150.000.
Ref.: Young & Morgan (1987), Speas (1990, 1991), Hale & Platero (2000), Bresnan (2001b), McDonough (2000), Hale (2001)

Generalization:
Navajo employs an accusative head-marking pattern.

19. Navajo 2

Note:
Lexical DPs are usually optional in head-marking languages like Navajo (Jelinek (1984), Nichols (1986)); one may assume that primary arguments are nevertheless present in the syntax here, in the form of empty DP pronouns (see Baker (1996), Bruening (2001) for some of the options that arise under this general view). The Navajo agreement markers are usually called SUBJECT and OBJECT markers in the literature, and glossed here with the labels NOM and ACC; they are fusional and encode person and number in addition to CASE.

20. Navajo 3

(12) *Intransitive verbs in Navajo*:

a. (Y)i-sh-cha
Ø-1.SG.NOM-cry
'I am crying.' (Speas (1990, 209))

b. Shi (y)i-sh-áál
I Ø-1.SG.NOM-go
'I am going.' (Bresnan (2001b, 167))

21. Navajo 4

(13) *Transitive verbs in Navajo*:

a. Ni-sh-ch'id
2.SG.ACC-1.SG.NOM-scratch
'I am scratching you.'

b. Shí-í-ní-gháád
1.SG.ACC-PERF-2.SG.NOM-shake
'You shook me.' (Speas (1990, 209))

c. Hastóí ashkii dayiiłtsą́
Men boy PL-3.SG.ACC-3.SG.NOM-saw
'The men saw the boy.' (Speas (1990, 211))

d. Ashkii at'ééd yiyiiłtsą́
Boy girl 3.SG.ACC-3.SG.NOM-saw
'The boy saw the girl.' (Speas (1990, 215))

e. Ashkii yiyiiłtsą́
boy 3.SG.ACC-3.SG.NOM-saw
'He/she/it saw the boy.' (Speas (1990, 214))

22. Navajo 5

(14) *Morphological markers for argument encoding in Navajo*

Person	NOM marker ('SUBJECT marker')	ACC marker ('OBJECT marker')
1.sg.	sh	shi
2.sg.	ni	ni
3.sg./pl.	Ø	yi (bi)
1.d/pl	iid	nihi
2.d/pl.	oh	nihi

23. Sierra Popoluca 1

Mixe-Zoque language, Mexico (Isthmus of Tehuantepec , Veracruz, Soteapan: 'Soteapan Zoque'); speakers < 30.000.
Ref.: Elson (1960a,b), Elson & Pickett (1964), Lind (1964), Marlett (1986), Wichmann (1993)

Generalization:
Sierra Popoluca employs an ergative head-marking pattern.

24. Sierra Popoluca 2

Observation:
As in Navajo, lexical DPs are optional (a general property of head-marking languages). Elson (1960b) calls the agreement markers ASSOCIATE, PARTICIPANT; Marlett (1986) identifies the basic ergative marking pattern and calls the markers A, B. The agreement markers also indicate person, but not number; the latter

plays a minor role in Sierra Popoluca morpho-syntax (Elson (1960b, 209/218)).

25. Sierra Popoluca 3

(15) *Intransitive verbs in Sierra Popoluca*:

a. A-nɨk-pa
1.ABS-go-UNV
'I am going.' (Marlett (1986, 364))

b. A-pɨːšiñ
1.ABS-man
'I am a man.'

c. Ta-hoːy-pa
1.INCL.ABS-take a walk-UNV
'You and I take a walk.'

d. Ø-Wiˀk-pa
3.ABS-eat-UNV
'He is eating.'

e. Ø-Nɨk-pa šiwan
3.ABS-go-UNV John
'John is going.'

f. Ø-Koˀc-taː-p šiwan
3.ABS-hit-PASS-UNV John
'John is being hit.' (Elson (1960b, 208))

26. Sierra Popoluca 4

(16) *Transitive verbs in Sierra Popoluca*:

a. A-Ø-koˀc-pa
1.ABS-3.ERG-hit-UNV
'He is hitting me.'

b. Ø-Aŋ-koˀc-pa
3.ABS-1.ERG-hit-UNV
'I am hitting him.'

c. M-aŋ-koˀc-pa
2.ABS-1.ERG-hit-UNV
'I am hitting you.'

d. Ø-I-koˀc-pa
3.ABS-3.ERG-hit-UNV
'He is hitting him.' (Elson (1960b, 208))

e. Ø-I-koˀc-yah-pa
3.ABS-3.ERG-hit-3.PL-UNV
'They are hitting him.'/'He is hitting them.'/'They are hitting them.' (Elson (1960b, 209))

27. Sierra Popoluca 5

Table 3: Morphological markers for the encoding of arguments in Sierra Popoluca

	ABS	ERG
1.	a	an
$1._{\text{incl}}$	ta	tan
2.	mi	iñ
3.	Ø	i

	ABS ← ERG
1 → 2	m(i)-an
2 → 1	a-(i)n

28. Sierra Popoluca 6

Observation:
The ergative markers show up in two additional contexts: as possessive markers in NPs (see Benveniste (1974), Anderson (1992)), and with the distribution of a nominative marker in an accusative pattern, in certain kinds of embedded clauses (in temporal adverbial clauses without a Spanish adverb, and in some clauses that are dependent on intransitive verbs).

29. Sierra Popoluca 7

(17) *Ergative markers as possessive markers in Sierra Popoluca*:

a. an-tɨk
1.ERG-house
'my house'

b. M-an-haːtuŋ
2.ABS-1.ERG-father
'You are my father.' (Elson (1960b, 208))

(18) *Ergative markers in adverbial embedded clauses in Sierra Popoluca*:

mu an-nɨk
when 1.ERG-go
'als I went (Elson (1960b, 208), Marlett (1986, 364))

30. Active Systems

Observation:
In addition to the canonical pattern in table 1, language may choose to treat NP_{ext} and NP_{int} differently in intransitive contexts: an active system of split ergativity ('Split-S', 'Fluid-S' in Dixon's (1994) system).

Table 4: Active marking

Active marking	
NP_{ext}-V_i	NP_{int}-V_i
NP_{ext}-V_t	NP_{int}-V_t
erg	abs

31. Basque

Language isolate, Spain/France; speakers < 700.000
Ref.: Levin (1983), Ortiz de Urbina (1989), Laka (1993), Rezac (2003), Hualde & Ortiz de Urbina (2003)

Generalization:
Basque employs an active ergative case-marking pattern.

(19) *Intransitive and transitive verbs in Basque*:
a. Jon-∅ etorri da
Jon-ABS come:PTCP.PRF be:3.SG.INTR
'Jon came.'
b. Jon-ek saltatu du
Jon-ERG jump:PTCP.PRF have:3.SG.TR
'Jon jumped.'
c. Jon-ek ardo-a-∅ ekarri du
Jon-ERG wine-DET-ABS bring:PTCP.PRF have:3.SG.TR
'Jon brought the wine.' (Hualde & Ortiz de Urbina (2003, 364))

32. Guaraní

Tupí-Guaraní language, Paraguay; speakers < 5.000.000
Ref.: Gregores & Suárez (1967), Dixon (1994), Primus (1995)

Generalization:
Guaraní employs an active ergative head-marking pattern.

(20) *Intransitive and transitive verbs in Guaraní*:
a. Še-manuˀa
1.SG.ABS-rembember
'I remember.'
b. A-ma.apo
1.SG.ERG-work
'I work.'
c. ∅-Ai-pete
3.SG.ABS-1.SG.ERG-hit

'I hit him.'

d. Še-Ø-pete
1.SG.ABS-3.SG.ERG-hit
'He hits me.' (Gregores & Suárez (1967), Primus (1995, 1098))

33. Primitive Argument Types (Dixon and Comrie) 1

(21) *Comrie's (1989) system*:
a. S = NP_{ext}-V_i, NP_{int}-V_i
b. A = NP_{ext}-V_t
c. P = NP_{int}-V_t

"The discussion [...] is based on Comrie (1978b). Very similar ideas, though with certain differences in terminology, emphasis, and concept, are given independently in Dixon (1979)." (Comrie (1989, 123))

(22) *Dixon's (1994) system*:
a. S = NP_{ext}-V_i, NP_{int}-V_i
b. A = NP_{ext}-V_t
c. O = NP_{int}-V_t

"A survey of the literature shows that the letters S, A and O (which were first used in Dixon 1968, then Dixon 1972) are the most common symbols used for the three primitives. However, some scholars use P (for patient) in place of O (e.g. Comrie 1978)." (Dixon (1994, 6))

34. Primitive Argument Types (Dixon and Comrie) 2

Claim (Dixon (1994, 6)):
"All languages work in terms of three *primitive* relations:" S, A, O.

However:

(23) "Since each grammar must include semantically contrastive marking for A and O, this can usefully be applied also to S – those S which are semantically similar to A [...] will be S_a, marked like A, and those S which are semantically similar to O [...] will be S_o, marked like O." (Dixon (1994, 70))

Conclusion:
Neither Comrie's nor Dixon's system is particularly well designed vis-a-vis the goal of describing active marking patterns. What can be done? There are several possibilities:

- S_a, S_o are further primitives.
- NP_{ext}, NP_{int}, V_t, V_i are the true primitives.

35. Active Accusative Systems: Eastern Pomo

Extinct, Hokan (California).
Ref.: Bittner & Hale (1996b).

(24) *Intransitive and transitive verbs in Eastern Pomo*:

a. Míip míip-al sáaka
he.NOM him-ACC killed
'He killed him.'

b. Míip-al xáa baakúma
him-ACC in the water fell
'He fell in the water (accidentally).'

c. Míip káluhuya
he.NOM went home
'He went home.'

36. Anti-active Systems

Another logical possibility (that suggests itself given active ergative marking patterns) is not attested.

Accusative language with accusative marking of NP$_{ext}$-V$_i$.

Table 5: Anti-active marking

Anti-active pattern

NP$_{ext}$-V$_i$	NP$_{int}$-V$_i$
NP$_{ext}$-V$_t$	NP$_{int}$-V$_t$
nom	acc

37. German′

(25) **Anti-active language*:

a. Ihn hat gearbeitet (ihn: EXT)
him.ACC has worked
'He has worked.'

b. Er ist hingefallen (er: INT)
he.NOM is fallen
'He fell.'

c. Sie hat ihn geküsst (sie: EXT, ihn: INT)
she.NOM has him.ACC kissed
'She kissed him.'

Observation and functional explanation (Bechert (1979)):
Such languages do not seem to exist. They ensure a differentation of NP$_{ext}$ and

NP_{int} in V_t contexts (the minimum requirement for argument encoding systems); however, they are extremely dysfunctional because there is no implicational relation between case and argument type (external/internal) in this marking system.

38. More Splits: Person-Based Split Ergativity

Person-based split ergativity in Dyirbal:
In Dyirbal, NP_{ext} of V_t is marked ergative (*-ŋgu*) if it is a 3rd person pronoun or an item to the right of it on the person/animacy scale in (26). NP_{int} of V_t is marked accusative (*-na*) if it is a 1st or 2nd person pronoun. All other types of argument NP remain without an overt marker (see Dixon (1972, 1994)).

(26) *Person/animacy scale* (Silverstein (1976), Aissen (1999)):
1st person pronoun > 2nd person pronoun > 3rd person pronoun > proper name > common noun, human > common noun, animate > commoun noun, inanimate

39. More Splits: Tense-/Aspect-Based Split Ergativity

Tense-/Aspect-based split ergativity:

- In Burushaski past tense contexts, ergative case shows up on DP_{ext} of V_t; other arguments are not overtly marked. In other contexts, there is no case marker whatsoever; but there is a fairly fixed constituent order and agreement marking to some extent (see Dixon (1994) and references cited there).
- In Hindi perfective aspect contexts, DP_{ext} of V_t is marked with ergative case; other DPs are not overtly marked. In other contexts, DP_{int} of V_t is marked with accusative case; other DPs are not marked (see, e.g., Mahajan (1990)).

40. Syntactic Ergativity 1

Note:
So far, the notion of "subject" has played no role. However, there are operations that refer to such a concept, e.g.: reflexivization, raising, control, imperative formation, relativization, topic chaining ('pivot-chaining'; Dixon (1972, 1994)).

Side remark:
Dixon (1994) uses the notions *subject* and *pivot*, for S/A- and S/O-groupings in "underlying structure" (subject) and "derived structures" (pivot), respectively. The latter case includes clause combining (e.g., via conjuction).

41. Syntactic Ergativity 2

Accusative pattern:
In accusative languages, it is typically the nominative argument that has subject properties (e.g., in German). Normally, the nominative argument is the highest (or single) argument. However, if the highest argument is a non-nominative argument, as it may be, e.g., in Icelandic oblique (quirky) subject constructions, then this latter argument can also have subject properties.

(27) *Raising of dative subjects in Icelandic*:

Barn-i=nu virð-i-st hafa batn-að
child-SG.DAT=DET.SG.NEUT.DAT seem-3.SG-PASS to have recover-SUP
veik-i=n
illness-SG.NOM=DET.SG.FEM.NOM

'The child seems to have recovered from the illness.' (Andrews (1982, (53-b)))

42. Syntactic Ergativity 3

Ergative pattern:
In ergative systems, there are two possibilites: Either the highest argument NP, or the argument NP that is marked with absolutive case, can exhibit subject properties:

1. *morphological ergativity*: except for CASE marking, the syntax treats $\mathrm{NP}_{ext/int}$-V_i and NP_{ext}-V_t on a par
2. *syntactic ergativity*: as with CASE marking, the syntax treats $\mathrm{NP}_{ext/int}$-V_i and NP_{int}-V_t on a par.

- Archi, Basque, Warlpiri: morphological ergativity
- Dyirbal (at least as a tendency): syntactic ergativity
- Chukch: optionality
- Inuit: Some operations select the highest argument as the subject, and other operations select the absolutive argument.

Ref.: Comrie (1989), Bobaljik (1993), Dixon (1994), Bittner & Hale (1996b,a), Bickel (1999).

43. Topic Chaining: English

(28) a. Father saw mother
b. Father/mother returned
c. *Father*$_1$ saw *mother*$_2$ and e_1/ *e_2 returned
d. *Father*$_1$ returned and *mother*$_2$ saw *e_1/ *e_2

Observation:
Argument realization and argument encoding go hand in hand.

44. Topic Chaining: Dyirbal

(29) a. ŋuma banaga-n^{y}u
father-ABS return-NONFUT
'Father returned.'
b. yabu banaga-n^{y}u
mother-ABS returned-NONFUT
'Mother returned.'
c. ŋuma yabu-ŋgu bura-n
father-ABS mother-ERG see-NONFUT
'Mother saw father.'
d. ŋuma banaga-n^{y}u yabu-ŋgu bura-n
father-ABS return-NONFUT mother-ERG see-NONFUT
'Father$_1$ returned and mother$_2$ saw him$_1$.'
e. ŋuma yabu-ŋgu bura-n banaga-n^{y}u
father-ABS mother-ERG see-NONFUT return-NONFUT
'Mother saw father and he returned.'

Observation:
Argument realization and argument encoding go hand in hand: syntactic ergativity.

45. Topic Chaining: Chukchi

(30) ətləɣ-e talayvənen ekək ənkʔam ekvetɣʔi
father-ERG he-hit-him son-ABS and he-went.away
"The father hit the son, and the father/the son went away."

Observation:
Argument realization and argument encoding may diverge: optional syntactic ergativity.

46. Ergative vs. Accustive – Strategies for Analysis

Theoretical options:

1. *Argument realization*:
   Accusative and ergative encoding patterns involve different types of argument realization (i.e., a different projection of argument structures into syntax). *Argument encoding* in the syntax can then take place in a uniform way

2. *Argument encoding*:
   Accusative and ergative encoding patterns involve identical types of *argument realization*. However, the systems of morphological encoding of arguments in the syntax are different.

Predictions:

- Argument realization → *syntactic* ergativity/accusativity
- Argument encoding → *morphological* ergativity/accusativity

47. Argument Realization Approaches

This is the classical type of analysis in theoretical syntax. The hypothesis that a difference in argument realiziation is responsible for the ergative/accusative parameter comes in two versions a *strong* and a *weak* one.

- Ergative and accusative languages project the primary arguments of the verb in a different order. → Marantz (1984)
- Ergative and accusative languages project the primary arguments of the verb differently, but in the same order. → Nash (1996))

48. Marantz' Analysis 1

A language may choose between the generalizations in (31) and (32).

(31) Accusative pattern:
  a. AGENT Θ-role ⟵ assigned by predicate
  b. THEME/PATIENT Θ-role ⟵ assigned by verb

(32) Ergative pattern:
  a. AGENT Θ-role ⟵ assigned by verb
  b. THEME/PATIENT Θ-role ⟵ assigned by predicate

Terminology:

- "assigned by verb" = merged in VP (= internal argument)
- "assigned by predicate" = merged outside of VP (in SpecvP) (=external argument)

49. Marantz' Analysis 2

Consequences:

1. There are *enourmous syntactic differences* with repsect to the relation between a verb and its arguments between the two language types.
2. Morphological ergativity always implies *syntactic ergativity.* ("On the definition just given, many of the languages called ergative in the literature turn out to be nominative-accusative. These languages distribute case marking in such a way that, for the most part, the correspondence between semantic roles and case marking matches that for a true ergative language"; Marantz (1984, 196-197))
3. Strictly speaking, an *active encoding pattern* is predicted for ergative systems.

50. Minimalist Analyses 1

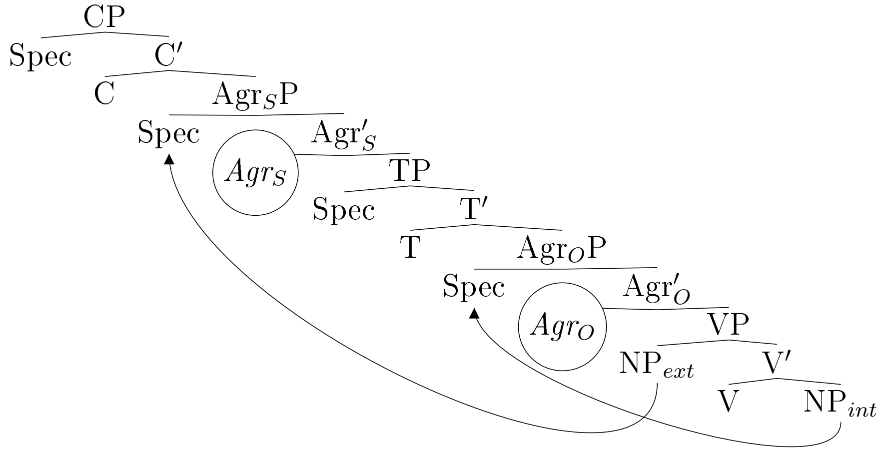
- The cases of primary arguments are determined by two different syntactic heads K_1, K_2 (e.g.: K_1 = Agr_s, K_2 = Agr_o). The two language types are identical with respect to V_t contexts; in V_i contexts, there are differences. Only K_2 is "activated" in ergative languages, and only K_1 is "activated" in accusative languages.

    1. ERG, NOM $\rightarrow K_1$
    2. ABS, ACC $\rightarrow K_2$

(Chomsky (1993), Bobaljik (1993), Laka (1993), Rezac (2003))

51. Sketch of an Analysis in Chomsky (1993) 1

(33) *Phrase Structure*:



52. Sketch of an Analysis in Chomsky (1993) 2

Assumptions:

1. Agreement and (structural) case are manifestations of specifier/head relations: <NP, Agr>
2. Two occurrences of Agr nodes are required for two NPs in VP (without lexical case).
3. Case properties in Agr domains are determined by both Agr and V,T: There is head movement of V to Agr_O, and of T to Agr_S.
4. NP_{int} moves to $\mathrm{SpecAgr}_O$ and checks case there; NP_{ext} moves to $\mathrm{SpecAgr}_S$ and checks case there.

53. Sketch of an Analysis in Chomsky (1993) 3

(34) *Ergative/Absolutive Parameter*:
   a. If only one NP in VP needs structural case, only one of the two Agr nodes is *active* (the other one is inert or missing): Agr_S or Agr_O.
   b. Accusative pattern: *Active* Agr_S
   NP shares properties with the subject of a transitive context.
   c. Ergative pattern: *Active* Agr_O
   NP shares properties with the object of a transitive context.

54. Sketch of an Analysis in Chomsky (1993) 4

Chomsky's Analysis as an argument encoding approach:

Chomsky (1993, 9-10):
"These are the only two possibilities, *mixtures apart.* The distinction between the two language types reduces to a *trivial question of morphology*, as we expect. Note that from this point of view, the terms *nominative, absolutive*, and so on, have no substantive meaning apart from what is determined by the choice of "active" vs. "inert" Agr; there is no real question as to how these terms correspond across language types."

55. Sketch of an Analysis in Chomsky (1993) 5

Problem (Comrie (1989), Dixon (1994)):

- Accusative case and ergative case are typically *morphologically more marked.*

- Nominative case and absolutive case are often *morphologically less marked (or not marked at all).*

Chomsky's explanation:
"The "active" element (Agr_S in nominative-accusative languages and Agr_O in ergative-absolutive languages) typically assigns a less-marked Case to its Spec, which is also higher on the extractibility hierarchy, among other properties. It is natural to expect less-marked Case to be compensated (again, as a tendency) by more-marked agreement (richer overt agreement with nominative and absolutive than with accusative and ergative). The *c-command condition on anaphora* leads us to expect nominative and ergative binding in transitive constructions."
Footnote 13: "For development of an approach along such lines, see Bobaljik (1992a,b)."

56. Minimalist Analyses 2

- The cases of primary arguments are determined by two different syntactic heads K_1, K_2 (K_1 = I, K_2 = V). In ergative languages, K_1 determines ergative case, and K_2 does not determine a structural case. In accusative languages, K_1 does not determine a structural case, and K_2 determines accusative case. The remaining (or single) argument receives C(omp)-related *default case* ('K-Filter').

1. ERG $\rightarrow$ K_1
2. ACC $\rightarrow$ K_2
3. NOM, ABS $\rightarrow$ Default

(Bittner & Hale (1996a))

57. Minimalist Analyses 3

- The cases of primary arguments are determined by two different syntactic heads K_1, K_2 (e.g.: $K_1 = \mathrm{Agr}_s$, $K_2 = \mathrm{Agr}_o$). In V_i contexts, the two language types are identical (only K_1 can determine case). In V_t contexts, K_2 is "strong" in ergative languages; and K_1 is "strong" in accusative languages.

  Assumption: Strong K attracts the highest NP argument.

  Consequence: Embedded vs. nesting paths in ergative vs. accusative languages.

1. ERG, ACC $\rightarrow$ K_2
2. NOM, ABS $\rightarrow$ K_1

(Murasugi (1992), Jelinek (1993))

58. Optimality Theoretic Analyses

Optimality Theoretic Analyses:

- $\text{Erg}_{trans} \gg$ *Erg in ergative languages
- *Erg $\gg \text{Erg}_{trans}$ in accusative languages

(35) Erg_{trans}:
The highest NP argument of a transitive verb bears ergative case.

(36) *Erg:
NP arguments must not bear ergative case.

Note:
(i) Erg_{trans} may be viewed as either a markedness constraint or a faithfulness constraint (see Heck et al. (2002)).
(ii) *Erg is a markedness constraint.

Ref.: (Kiparsky (1999), Stiebels (2000), Woolford (2001), Lee (2003))

59. Criteria for Explanatory Adequacy

Possible criteria for theory formation:

1. There are no construction-specific rules for cases like ERG, ACC.
2. The projection of arguments from lexicon to syntax is uniform across languages.
3. There are no semantically irrelevant projections like Agr_sP, Agr_oP (Chomsky (1995, 2001)).
4. Case assignment is independent of movement (Chomsky (2000, 2001)).
5. (a) ERG, ACC $\rightarrow$ internal structural case (K_2)
   (b) NOM, ABS $\rightarrow$ external structural case (K_1)

6. Internal case is generally morphologically more marked; external case often remains without overt marking (Comrie (1989), Dixon (1994)).

Chapter 2

Optimality Theory

1. Basic Question

How can existing patterns of argument encoding
be derived from theories of theories of case and agreement?

accusative pattern

NP_{ext}-V_i	NP_{int}-V_i
NP_{ext}-V_t	NP_{int}-V_t
nom	acc

(Icelandic, Navajo)

ergative pattern

NP_{ext}-V_i	NP_{int}-V_i
NP_{ext}-V_t	NP_{int}-V_t
erg	abs

(Archi, Sierra Popoluca)

active pattern

NP_{ext}-V_i	NP_{int}-V_i
NP_{ext}-V_t	NP_{int}-V_t
erg	abs

(Basque, Guaraní)

1. split ergativity based on argument-type (Dyirbal)
2. split ergativity based on tense/aspect (Hindi)
3. split ergativity based on clause type (Sierra Popoluca) clause-type based

2. Optimality Theoretic Analyses

Answer given in Optimality Theory (Prince & Smolensky (2004), Smolensky & Legendre (2006)):
All natural languages obey exactly the same constraints on argument encoding. For instance:

(1) a. All languages have a constraint that requires NP_{ext}-V_t to be marked by *ergative* CASE.
b. All languages have a constraint that requires NP_{int}-V_t to be marked by *accusative* CASE.

However: Constraints are violable and ranked. Different constraint rankings produce different grammars with different argument encoding systems.

3. Literature

Relevant literature:

- Kiparsky (1999)
- Wunderlich (2000)
- Stiebels (2000, 2002)
- Woolford (2001)
- Lee (2003)

4. Background: Optimality Theory

(2) Basic assumptions:
  a. Constraints are *violable*.
  b. Constraints are *ranked*.
  c. Constraints are *universal*.
  d. Wellformedness (grammaticality) of a linguistic expression is decided by a *competition* of forms: The candidate with the best constraint profile in a given candidate set is optimal (= grammatical), all other candidates are suboptimal (= ungrammatical).

5. Optimality Theory: Definitions

(3) *Optimality*:
A candidate C_i is optimal (= grammatical) iff there is no candidate C_j in the same candidate set that has a better constraint profile.

(4) *Constraint Profile*:
A candidate C_j has a better constraint profile than a candidate C_i iff there is a constraint Con_k such that (a) and (b) hold:
  a. C_j satisfies Con_k better than C_i.
  b. There is no constraint Con_l ranked higher than Con_k on which C_i and C_j differ.

Note:
C_j satisfies a constraint Con better than C_i iff C_j has fewer violations of Con. This implies the case that C_i violates Con once (or more often), and C_j does not violate Con at all.

6. Organization of the Grammar

$\boxed{\textit{Input}}$ → $\boxed{\textit{Gen}\text{(erator)}}$ → $\boxed{\textit{H}\text{(armony-)}\textit{Eval}\text{(uation)}}$

(generates candidates) (determines optimal candidate)

This presupposes that in addition to the constraints employed by the Gen component, which are inviolable and unranked, the H-Eval component relies on a system of constraints that are violable and ranked (and, by assumption, universal) in order to determine the best constraint profile, hence, optimality. The ranking among the violable local constraints of the H-Eval component is indicated by the symbol $\gg$; the H-Eval constraints themselves are typically written with small capitals. Optimality-theoretic competitions are often illustrated by tables (so-called *tableaux*); optimality of a candidate is indicated by the *pointing finger* (here: →); violation of a constraint is shown by a star *** in the appropriate column of the table; if this violation is fatal for a candidate (i.e., responsible for its suboptimality), an exclamation mark *!* is added. In the abstract H-Eval competition in table $T_{2.1}$, in which the candidate set consists of C_1–C_5, C_1 emerges as the optimal candidate: It avoids a violation of the high-ranked constraints A and B (unlike C_3–C_5), and it minimizes a violation of the low-ranked constraint C (unlike C_2). Hence, there is no competing candidate with a better constraint profile than C_1.

7. Tableaux

$T_{2.1}$: Determining optimality

Candidates	A	B	C
→ *C_1*			*
C_2			**!
C_3		*!	
C_4	*!		
C_5		*!	*

$T_{2.2}$: Reranking

Candidates	A	C	B
C_1		*!	
C_2		*!*	
→ *C_3*			*
C_4	*!		
C_5		*!	*

8. Important Concepts 1

Constraint reranking = parametrization:
By reranking the constraints B and C in $T_{2.1}$, candidate C_3 emerges as the optimal candidate. Reranking of constraints forms the basis of the concept of parametrization in optimality-theoretic syntax.

Non-cumulativity:
A further characteristic feature of this approach is that it is essentially non-cumulative; i.e., no number of violations of a low-ranked constraint can outweigh a single violation of a higher-ranked constraint. Thus, suppose that there were an additional, lowest-ranked constraint D in $T_{2.1}$ that C_1 violates, say, five times, and that C_2–C_5 do not violate at all. This would not undermine C_1's optimality.

9. Important Concepts 2

Candidates and candidate sets:

1. The input defines the *candidate set* (for present purposes).
2. The competing *candidates* are phrase-structure trees (sentences)

Two types of constraints:

1. markedness constraints
2. faithfulness constraints

10. Woolford's (2001) Analysis

Background assumptions:

1. There are (ordered) markedness constraints that block the realization of cases.
2. There are faithfulness constraints that demand the realization of case specifications in the input (lexical, inherent case).
3. Nominative/absolutive and accusative are structural cases; dative and ergative (and genitive) are inherent cases (that must be specified on a verb).
4. Every NP must be case-marked.

11. Woolford (2001) on Dative Subjects 1

(5) a. *DAT ("*Dative"):
Avoid dative case.
b. *ACC ("*Accusative"):
Avoid accusative case.
c. *NOM ("*Nominative"):
Avoid nominative case.
d. FAITH-LEX:
Realize a case feature specified on V in the input.
e. FAITH-LEX$_{\text{trans}}$:
Realize a case feature specified on transitive V in the input.

12. Woolford (2001) on Dative Subjects 2

(6) a. *Ranking in Icelandic*:
FAITH-LEX$_{tr}$ $\gg$ FAITH-LEX $\gg$ *DAT $\gg$ *ACC $\gg$ *NOM
b. *Ranking in Japanese*:
FAITH-LEX$_{tr}$ $\gg$ *DAT $\gg$ FAITH-LEX $\gg$ *ACC $\gg$ *NOM
c. *Ranking in English*:
*DAT $\gg$ FAITH-LEX$_{tr}$ $\gg$ FAITH-LEX $\gg$ *ACC $\gg$ *NOM

13. Woolford (2001) on Dative Subjects 3: Icelandic

(7) a. Bátnum hvolfdi
boat$_{dat}$ capsized
b. Barninu batnaði veikin
child$_{dat}$ recovered from disease$_{nom}$

$T_{2.3}$: Intransitive V in Icelandic; inherent dative

Candidates	FAITH-LEX$_{tr}$	FAITH-LEX	*DAT	*ACC	*NOM
→ C_1: NP_{dat} $V_{[+dat]}$			*		
C_2: NP_{nom} $V_{[+dat]}$		*!			*
C_3: NP_{acc} $V_{[+dat]}$		*!		*	

14. Woolford (2001) on Dative Subjects 4: Japanese

(8) a. Akatyan-ga/*-ni moo arukeru
baby$_{nom/dat}$ already walk can

$T_{2.4}$: Transitive V in Icelandic; inherent dative on NP_{ext}

Candidates	FAITH-LEX$_{tr}$	FAITH-LEX	*DAT	*ACC	*NOM
→ C_1: NP_{dat} $V_{[+dat]}$ NP_{nom}			*		*
C_2: NP_{dat} $V_{[+dat]}$ NP_{acc}			*	*!	
C_3: NP_{nom} $V_{[+dat]}$ NP_{acc}	*!	*		*	*

b. Taroo-ni eigo-ga hanaseru
Taro$_{dat}$ English$_{nom}$ speak can

$T_{2.5}$: Intransitive V in Japanese; no inherent dative

Candidates	FAITH-LEX$_{tr}$	*DAT	FAITH-LEX	*ACC	*NOM
C_1: NP_{dat} $V_{[+dat]}$		*!			
→ C_2: NP_{nom} $V_{[+dat]}$			*		*
C_3: NP_{acc} $V_{[+dat]}$			*	*!	

$T_{2.6}$: Transitive V in Japanese; inherent dative on NP_{ext}

Candidates	FAITH-LEX$_{tr}$	*DAT	FAITH-LEX	*ACC	*NOM
→ C_1: NP_{dat} $V_{[+dat]}$ NP_{nom}		*			*
C_2: NP_{dat} $V_{[+dat]}$ NP_{acc}		*		*!	
C_3: NP_{nom} $V_{[+dat]}$ NP_{acc}	*!		*	*	*

15. Woolford (2001) on Ergative Patterns: 1

(9) *ERG ("*Ergative"):
Avoid ergative case.

Note:

1. *ERG is ranked high in languages with an accusative argument encoding system.
2. The ergative is an inherent case; it must be specified for an external argument on V (and it can be specified only for an external argument).

16. Woolford (2001) on Ergative Patterns: 2

(10) *Standard ergative pattern: Niuean (Polynesian)*

a. Ko e tohitohi a au (he) mogo-nei
PRES write NOM I on time this
'I am writing at the moment.'

b. To lagomatai he ekekafo a ia
FUT help ERG doctor NOM him
'The doctor will help him.' (Seiter (1980))

(11) *Active ergative pattern: Basque (Isolate)*:

(12) *Intransitive and transitive verbs in Basque*:

a. Jon-∅ etorri da
Jon-ABS come:PTCP.PRF be:3.SG.INTR
'Jon came.'

b. Jon-ek saltatu du
Jon-ERG jump:PTCP.PRF have:3.SG.TR
'Jon jumped.'

c. Jon-ek ardo-a-∅ ekarri du
Jon-ERG wine-DET-ABS bring:PTCP.PRF have:3.SG.TR
'Jon brought the wine.' (Hualde & Ortiz de Urbina (2003, 364))

17. Woolford (2001) on Ergative Patterns: 3

(13) a. *Ranking in Niuean (standard ergative pattern)*:
FAITH-LEX$_{tr}$ ≫ *ERG ≫ FAITH-LEX

b. *Ranking in Basque (active ergative pattern)*:
FAITH-LEX$_{tr}$ ≫ FAITH-LEX ≫ *ERG

c. *Ranking in English (accusative pattern)*:
*ERG ≫ FAITH-LEX$_{tr}$ ≫ FAITH-LEX

18. Woolford (2001) on Ergative Patterns 4: Niuean

$T_{2.7}$: Intransitive V in Niuean; no ergative on NP_{ext}

Candidates	FAITH-LEX$_{tr}$	*ERG	FAITH-LEX	*ACC	*NOM
C$_1$: NP$_{erg}$ V$_{[+erg]}$		*!			
→ C$_2$: NP$_{nom}$ V$_{[+erg]}$			*		*

$T_{2.8}$: Transitive V in Niuean; inherent ergative on NP_{ext}

Candidates	FAITH-LEX$_{tr}$	*ERG	FAITH-LEX	*ACC	*NOM
→ C$_1$: NP$_{erg}$ V$_{[+erg]}$ NP$_{nom}$		*			*
C$_2$: NP$_{erg}$ V$_{[+erg]}$ NP$_{acc}$		*		*!	
C$_3$: NP$_{nom}$ V$_{[+erg]}$ NP$_{acc}$	*!		*	*	*

19. Woolford (2001) on Ergative Patterns 5: Basque

$T_{2.9}$: Intransitive V in Basque; inherent ergative on NP$_{ext}$

Candidates	FAITH-LEX$_{tr}$	FAITH-LEX	*ERG	*ACC	*NOM
→ C$_1$: NP$_{erg}$ V$_{[+erg]}$			*		
C$_2$: NP$_{nom}$ V$_{[+erg]}$		*!			*

$T_{2.10}$: Transitive V in Niuean; inherent ergative on NP$_{ext}$

Candidates	FAITH-LEX$_{tr}$	FAITH-LEX	*ERG	*ACC	*NOM
→ C$_1$: NP$_{erg}$ V$_{[+erg]}$ NP$_{nom}$			*		*
C$_2$: NP$_{erg}$ V$_{[+erg]}$ NP$_{acc}$			*	*!	
C$_3$: NP$_{nom}$ V$_{[+erg]}$ NP$_{acc}$	*!	*		*	*

20. Woolford (2001) on Ergative Patterns 6: Hindi

(14) *Aspect-based split ergativity in Hindi*

a. Raam toTii khaataa thaa
Ram.MASC-NOM bread.FEM-ACC eat.IMP.MASC be.PAST.MASC
'Ram (habitually) ate bread.'

b. Raam-ne roTii khaayii thii
Ram-ERG bread-NOM eat.PERF.FEM be.PAST.FEM
'Ram had eaten bread.' (Mahajan (1990))

21. Woolford (2001) on Ergative Patterns 7: Hindi

Assumptions:

1. There is another constraint FAITH-LEX$_{\text{perf}}$.
2. Not all verbs with an external argument NP have an ergative case feature for this argument (this handles exceptions).
3. FAITH-LEX$_{\text{perf}}$ is the only FAITH-LEX constraint outranking *ERG in Hindi.

(15) Ranking in *Hindi*:
FAITH-LEX $_{\text{perf}}$ ≫ *ERG ≫ FAITH-LEX, *ACC

22. Woolford (2001) on Person-based Splits

Person-based split ergativity in Dyirbal:
In Dyirbal, NP$_{ext}$ of V$_t$ is marked ergative (*-ŋgu*) if it is a 3rd person pronoun

or an item to the right of it on the person/animacy scale. NP_{int} of V_t is marked accusative (*-na*) if it is a 1st or 2nd person pronoun. All other types of argument NP remain without an overt marker (see Dixon (1972, 1994)).

Assumption (p. 534, following Comrie):
"All transitive subjects in Dyirbal have ergative Case that is simply not morphologically realized on first- and second-person pronouns."
(p. 535:) "My conclusion is that (virtually) all subject splits (and some object splits) involve an alternation between realizing or not realizing one abstract Case."

23. Stiebels (2000; 2002): Lexical Decomposition Grammar

Background assumptions (Wunderlich, Kiparsky):

1. Θ-roles are characterized by *contextual features* derived from argument structures (that involve lexical decomposition): *[±hr], [±lr]* ('there is a higher role; there is a lower role').

2. Cases are defined in terms of the same primitive features; cases match Θ-role specifications as much as possible (specificity).

(16) *Θ-roles in lexical entries of verbs*:

a.	*sleep*:	$<\theta_1>$		
		[–hr,–lr]		
b.	*read*:	$<\theta_1,$	$\theta_2>$	
		[–hr,+lr]	[+hr,–lr]	
c.	*give*:	$<\theta_1,$	$\theta_2,$	$\theta_3>$
		[–hr,+lr]	[+hr,+lr]	[+hr,–lr]

24. Cases in Lexical Decomposition Grammar

(17) *Cases*:

NOM	[–]	
ACC	[+hr]	
ERG	[+lr]	
DAT	[+hr]	[+lr]

25. Stiebels (2000; 2002) on Constraints

(18) *Faithfulness constraints*:

a. IDENT*([hr])*:
The value of a [hr] feature of a Θ-role α in the input must not conflict with the value of the [hr] feature of an argument bearing α in the output.

b. IDENT*([lr])*:
The value of a [lr] feature of a Θ-role α in the input must not conflict with the value of the [lr] feature of an argument bearing α in the output.

c. MAX*([+hr])*:
A [+hr] specification of a Θ-role α in the input must appear on the argument bearint α in the output.

d. MAX*([+lr])*:
A [+lr] specification of a Θ-role α in the input must appear on the argument bearint α in the output.

(19) *Markedness constraints*:

a. **[+hr]*:
[+hr] must not appear in the output.

b. **[+lr]*:
[+lr] must not appear in the output.

c. UNIQUENESS: A case can show up only once per clause.

26. Stiebels (2000; 2002): Naive Predictions

Predictions:

- If there were only faithfulness constraints, every language would have both ergative (for NP_{ext}-V_t) and accusative (for NP_{int}-V_t) for the arguments of transitive verbs.

- Nominative should always be optimal for the sole argument of an intransitive verb.

- Dative should always be optimal for the intermediate argument with ditransitive verbs.

Markedness constraints ensure that these consequences can sometimes be avoided: **[+hr]* blocks accusative; **[+lr]* blocks ergative.

27. Deriving Specificity Effects 1

$T_{2.11}$: Accusative pattern: transitive verbs

read: *[–hr,+lr],[+hr,–lr]*	IDENT([hr])	IDENT([lr])	MAX([+hr])	MAX*([+lr])*
→ C_1: NP_{nom} NP_{acc} V				*
C_2: NP_{nom} NP_{nom} V			*!	*
C_3: NP_{acc} NP_{nom} V	*!		*	*
C_4: NP_{acc} NP_{acc} V	*!			*
C_5: NP_{nom} NP_{dat} V		*!		*
C_6: NP_{dat} NP_{acc} V	*!			
C_7: NP_{dat} NP_{dat} V	*!	*		
⇝ C_8: NP_{erg} NP_{acc} V				

28. Deriving Specificity Effects 2

$T_{2.12}$: Accusative pattern: ditransitive verbs

give: *[–hr,+lr],[+hr,+lr],[+hr,–lr]*	IDENT([hr])	IDENT([lr])	MAX([+hr])	MAX*([+lr])*
→ C_1: NP_{nom} NP_{dat} NP_{acc} V				*
C_2: NP_{nom} NP_{acc} NP_{acc} V				**!
C_3: NP_{nom} NP_{dat} NP_{nom} V			*!	*
C_4: NP_{nom} NP_{nom} NP_{acc} V			*!	**
C_5: NP_{nom} NP_{dat} NP_{dat} V		*!		*
C_6: NP_{dat} NP_{dat} NP_{acc} V	*!			
C_7: NP_{acc} NP_{dat} NP_{acc} V	*!			*

29. Deriving Specificity Effects 3

$T_{2.13}$: Ergative pattern: transitive verbs

read: [–hr,+lr],[+hr,–lr]	IDENT([hr])	IDENT([lr])	MAX*([+hr])*	MAX([+lr])
→ C_1: NP_{erg} NP_{nom} V			*	
C_2: NP_{nom} NP_{nom} V			*!	*
C_3: NP_{acc} NP_{nom} V	*!		*	*
C_4: NP_{acc} NP_{acc} V	*!			*
C_5: NP_{nom} NP_{erg} V		*!		*
⇝ C_6: NP_{erg} NP_{acc} V				

30. Stiebels (2000; 2002) on Accusative vs. Ergative Patterns

$T_{2.14}$: Nominative/accusative pattern

V: *[–hr,+lr],[+hr,–lr]*	UNIQ	MAX([+hr])	*[+hr]	*[+lr]	MAX([+lr])
→ C_1: NP_{nom} NP_{acc} V			*		*
C_2: NP_{erg} NP_{nom} V		*!		*	
C_3: NP_{erg} NP_{acc} V			*	*!	
C_4: NP_{nom} NP_{nom} V	*!	*			*

$T_{2.15}$: Ergative/absolutive pattern

V: *[–hr,+lr],[+hr,–lr]*	UNIQ	MAX([+lr])	*[+lr]	*[+hr]	MAX([+hr])
C_1: NP_{nom} NP_{acc} V		*!		*	
→ C_2: NP_{erg} NP_{nom} V			*		*
C_3: NP_{erg} NP_{acc} V			*!	*	
C_4: NP_{nom} NP_{nom} V	*!	*			*

⇝ Under which rankings are C_3 and C_4 predicted to become optimal?

31. Stiebels (2000; 2002) on Splits 1

Strategy:
The existing constraints are relativized with respect to certain features. The more fine-grained versions of the constraints (which are ranked higher than the general versions) then derive (e.g.) person-based split ergativity in Dyirbal and aspect-based split ergativity in Hindi.

(20) Some further constraints:

a. **[+lr]/[+1]*
   ('Avoid ergative marking in first person (or similar) contexts')
b. **[+hr]/[–anim]*
   ('Avoid accusative marking in third person inanimate contexts')
c. **[+lr]/[–perf]*
   ('Avoid ergative marking in non-perfect contexts.'

32. Stiebels (2000; 2002) on Splits 2

Notes:

1. In contrast to what we have seen with Woolford (2001), this implies that, e.g., first and third person NP_{ext}-V_t's have a different case in Dyirbal.

2. Kiparsky (1999) has an opposite constraint with a similar effect; see (21).

(21) *Max([+lr])/[+perf]*:
('Realize ergative marking in perfect contexts.')

33. Lee's (2003) Analysis

The analysis is developed within *OT-LFG* (Bresnan (2001a), Sells (2001)). An assumption taken over from work in LFG is that *cases (or case markers) have core meanings.*

(22) Erg:
   a. highest argument role
   b. volitional agent
   c. causer

(23) Acc:
   a. not highest argument role
   b. proto-patient

(24) Dat:
   a. goal
   b. sentience
   c. not a volitional agent
   d. not a causer

(25) Nom: –

34. Lee (2003) on Hindi 1

What we have seen so far (Woolford (2001)):

(26) *Aspect-based split ergativity in Hindi*

a. Raam toTii khaataa thaa
Ram.MASC-NOM bread.FEM-ACC eat.IMP.MASC be.PAST.MASC
'Ram (habitually) ate bread.'

b. Raam-ne roTii khaayii thii
Ram-ERG bread-NOM eat.PERF.FEM be.PAST.FEM
'Ram had eaten bread.' (Mahajan (1990))

However, upon closer inspection the situation is a bit more complicated.

35. Lee (2003) on Hindi 2

Four classes of verbs (based on Mohanan (1994)):

verb type	perfective	imperfective
class 1 (agentive transitive V)	erg	nom
class 2 (unergative intransitive V)	erg/nom	nom
class 3 (unaccusative intransitive V)	nom	nom
class 4 (unaccusative transitive V)	dat	dat

Note:

- (class 1): V in (26) belongs to class 1.
- (class 2): "Ergative case is conditioned by the semantic property of *volitional* participation in the action, not transitivity."

36. Lee (2003) on Hindi 3

(27) *Class 2* (non-volitional vs. volitional) in perfective contexts:

a. Raam-do acaanak šer dik^{h}aa. Vah/*us-ne
Ram-DAT suddenly lion-NOM appear.PERF *he*-NOM/*he-ERG
cillaayaa.
scream.PERF
'Ram suddenly saw a lion. He screamed.'

b. Us-ne/*vah jaanbuuj^{h}kar cillaayaa.
he-ERG/*he-NOM deliberately shout-PERF
'He shouted deliberately.'

(28) *Class 3* (unaccusative) in perfective contexts:

Raam/*Raam-ne giraa.
Ram-NOM/*Ram-ERG fall-PERF

'Ram fell hard.'

37. Lee (2003) on Hindi 4: Constraints

(29) Constraints (order indicates ranking in Hindi):

a. IDENT*(Sem)*:
Semantic features must not change their values from input (argument structure) to output (case marker).

b. MAX/DEP*([*GOAL*])*:
A [GOAL] specification can neither be added nor deleted from input to output.

c. ERG_{perf}:
The highest argument role in a perfective clause must be in the ergative.

d. *ERG:
Avoid ergative case markers.

e. MAX*([*VOL*])*:
A feature [VOL] in the input (argument structure) is realized in the output (case marker).

f. *SUBJ/DAT:
Avoid dative case markers for subjects.

g. *NOM:
Avoid nominative case markers.

38. Lee (2003) on Hindi 5: Class 1/2a

$T_{2.16}$: Class 1/2a: imperfective

V(Θ₁(,Θ₂)) [+VOL]	IDENT (Sem)	MAX/DEP ([GOAL])	ERG (perf)	*ERG	MAX ([VOL])	*SUBJ/ DAT	*NOM
C_1: NP_{ext}-ERG[+VOL]				*!			
→ C_2: NP_{ext}-NOM					*		*
C_3: NP_{ext}-DAT[−VOL,+GOAL]	*!	*				*	

$T_{2.17}$: Class 1/2a: perfective

V(Θ₁(,Θ₂)) [+VOL]	IDENT (Sem)	MAX/DEP ([GOAL])	ERG (perf)	*ERG	MAX ([VOL])	*SUBJ/ DAT	*NOM
→ C_1: NP_{ext}-ERG[+VOL]				*			
C_2: NP_{ext}-NOM			*!		*		*
C_3: NP_{ext}-DAT[−VOL,+GOAL]	*!	*	*			*	

39. Lee (2003) on Hindi 5: Class 2b/3

$T_{2.18}$: Class 2b/3: imperfective

V(Θ_1) [–VOL]	IDENT (Sem)	MAX/DEP ([GOAL])	ERG (perf)	*ERG	MAX ([VOL])	*SUBJ/ DAT	*NOM
C_1: NP_{ext}-ERG[+VOL]	*!			*			
→ C_2: NP_{ext}-NOM					*		*
C_3: NP_{ext}-DAT[–VOL,+GOAL]		*!				*	

$T_{2.19}$: Class 2b/3: perfective

V(Θ_1) [–VOL]	IDENT (Sem)	MAX/DEP ([GOAL])	ERG (perf)	*ERG	MAX ([VOL])	*SUBJ/ DAT	*NOM
C_1: NP_{ext}-ERG[+VOL]	*!			*			
→ C_2: NP_{ext}-NOM			*		*		*
C_3: NP_{ext}-DAT[–VOL,+GOAL]		*!	*			*	

40. Lee (2003) on Dyirbal

- Lee presents an analysis that is similar in its effects to the one developed by Stiebels. However, rather than relativizing the relevant constraints by adding person/argument type information, Lee relies on harmonic alignment and constraint conjunction, more or less as in Aissen (1999, 2003).

41. Conclusion 1

Do optimality-theoretic approaches to argument encoding meet the criteria for explanatory adequacy?

1. There are no construction-specific rules for cases like ERG, ACC.
2. The projection of arguments from lexicon to syntax is uniform across languages.
3. There are no semantically irrelevant projections like Agr_sP, Agr_oP (Chomsky (1995, 2001)).
4. Case assignment is independent of movement (Chomsky (2000, 2001)).
5. (a) ERG, ACC → internal structural case (K_2)

(b) NOM, ABS → external structural case (K_1)

6. Internal case is generally morphologically more marked; external case often remains without overt marking (Comrie (1989), Dixon (1994)).

42. Conclusion 2

Claim:

1. Existing optimality-theoretic analyses have problems with criterion (5) (it is not really clear why ergative and absolutive are mutually exclusive in the vast majority of languages).

2. Existing optimality-theoretic analyses all fail with respect to criterion (1): Some of the constraints are highly construction-specific. This may be taken to be indicative of a more general problem: The analyses are surface-oriented; there is little theoretical abstraction and, consequently, little progress towards explanatory adequacy.

An obvious example: Perfective environments in Hindi.

1. FAITH-LEX$_{perf}$ (Woolford (2001))
2. *[+lr]/[−perf] (Stiebels (2000))
3. Max([+lr])/[+perf] (Kiparsky (1999))
4. ERG$_{perf}$ (Lee (2003))

Chapter 3

The Minimalist Program

1. Overview

Three minimalist analyses:

1. Bobaljik (1993): 1 = ERG, NOM, 2 = ACC, ABS
2. Murasugi (1992): 1 = NOM,ABS, 2 = ACC,ERG
3. Bittner & Hale (1996b): 1 = ERG, 2 = ACC, 3 = NOM,ABS

2. Bobaljik's (1993) Analysis

3. Ergativity in Yup′ik

(1) *Yup′ik* (canonical ergative pattern):

a. Angute-m qusngiq ner-aa
man-ERG reindeer-ABS eat-+TRANS.3s/3s
'The man is eating the reindeer.'

b. Qusngiq ner′-uq
reindeer-ABS eta-−TRANS.3s
'The reindeer is eating.'

Focus of Bobaljik (1993):
The three basic argument encoding patterns (ergative, accusative, active); *not*: argument-type based, clause-type based, aspect/tense based splits.

4. Bobaljik (1993): Basic Assumptions

The analysis follows Levin & Massam (1985), and particularly Chomsky (1993): The cases of primary arguments are determined by two different syntactic heads K_1, K_2 (e.g.: $K_1 = Agr_s$, $K_2 = Agr_o$). The two language types are identical with respect to V_t contexts; in V_i contexts, there are differences. Only K_2 is “activated” in ergative languages, and only K_1 is “activated” in accusative languages.

1. ERG, NOM $\rightarrow K_1$

2. ABS, ACC $\rightarrow K_2$

The *morphological marking* problem (Chomsky (1993)):
“The “active” element typically assigns a less-marked Case to its Spec.” (Chomsky (1993))

5. The Obligatory Case Parameter

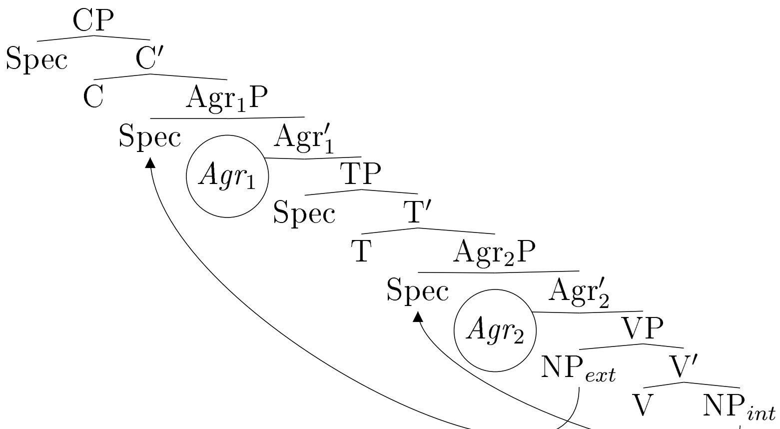
(2) *Obligatory Case*:
Case X is obligatorily assigned/checked.

(3) *Obligatory Case Parameter* (*OCP*):
   a. In nominative/accusative languages, CASE X is nominative (= ERG).
   b. In ergative/absolutive languages, CASE X is absolutive (= ACC).

“Presumably, the observed morphological tendency towards null morphology for these Cases is a reflection of this obligatory status.” (Bobaljik (1993, 51))

6. Clause Structure

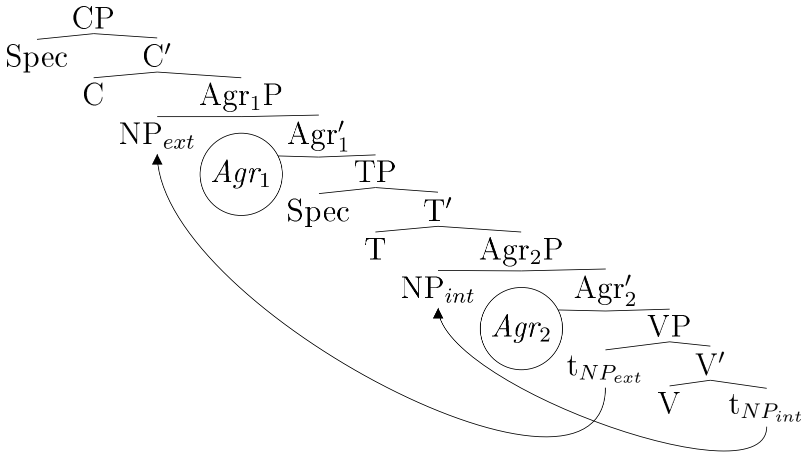
(4) *Clause Structure* (assumed by Bobaljik (1993)):



Agr-1 = NOM, ERG; “subject” AGREEMENT
Agr-2 = ACC, ABS; “object” AGREEMENT

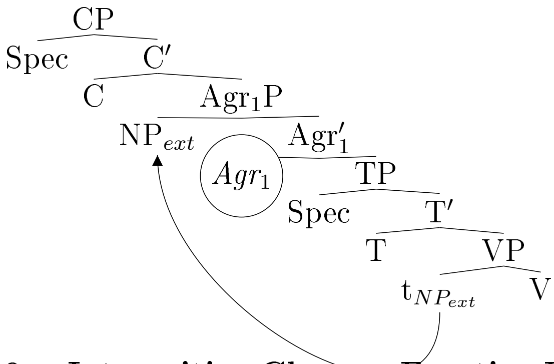
7. Transitive Clauses: Ergative and Accusative Patterns

(5) *NP_{ext}-V_t and NP_{int}-V_t move to case positions in transitive causes*:



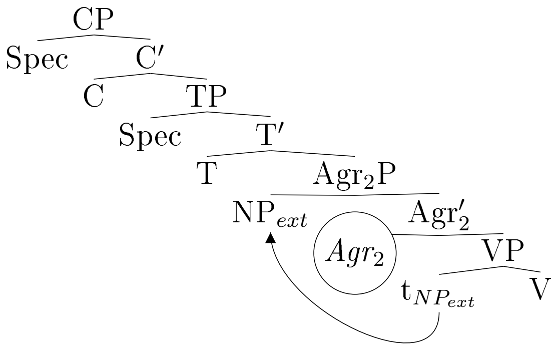
8. Intransitive Clauses: Accusative Patterns

(6) *NP_{ext}-V_i (or NP_{int}-V_i) moves to SpecAgr$_1$ in transitive causes*:



9. Intransitive Clauses: Ergative Patterns

(7) *NP_{ext}-V_i (or NP_{int}-V_i) moves to SpecAgr$_2$ in transitive causes*:



10. Argument Realization

Prediction:
Unless further assumptions are made, syntactic ergativity is not expected (argu-

ment realization is uniform).

(8) *Reflexivization*:
  a. Mary_1 saw $\text{herself}_{1/*2}$ (in the mirror)
  b. *Herself_1 saw Mary_1 (in the mirror)

(9) *Principles A and B of Chomsky's (1981) Binding Theory*:
  a. A: An anaphor must be A-bound in its governing category.
  b. B: A pronoun must be A-free in its governing category.

(10) *Binding*:
  α A-binds β iff (a) and (b) hold:
  a. α and β are coindexed.
  b. α c-commands β.

Note: *Reciprocals* are anaphors in the sense of (9).

11. Basque Reciprocals

The evidence shows that the external argument binds the internal argument in transitive contexts, not vice versa.

(11) *Reciprocals in Basque*:
  a. mutil-ek elkar ikusi dute
     boys-ERG each other-ABS see AUX.3sA/3pE
     'The boys saw each other.'
  b. *elkar-rek mutil-ak ikusi ditu(zte)
     each other-ERG boys-ABS see AUX.3pA/3sE(3pE)
     'The boys saw each other.'

12. Abkhaz Reflexive Agreement

Abkhaz (North East Caucasian; Georgia) ensures argument encoding via *head marking*. Still, there is evidence that the NP_{ext} asymmetrically c-commands NP_{int}.

(12) *Reflexive Agreement in Abkhaz*:
  a. l-xe y-l-ba-yt′
     3sf-head(n) 3snA-3sfE-see-PRES
     'She sees herself.'
  b. s-xe y-z-ba-yt′
     1s-head 3snA-1sE-see-PRES
     'I see myself.'

13. Inuit Reflexive Possessives

(13) *Inuit Reflexive Possessives*:

a. Piita-up anaana-*ni* nagligi-ja∼a
Piita-ERG mother-POSS.3s/refl/ABS love-3s/3s
'Piita loves his mother.' (his = Piita)

b. Piita-up anaana-∼*a* nagligi-ja∼a
Piita-ERG mother-POSS.3s/ABS love-3s/3s
'Piita loves his mother.' (*his = Piita)

(14) *Impossible anaphoric binding into external arguments*:

a. *Anaana-*mi* Piita nagligi-ja∼a
mother.3s/REFL/ERG Piita-ABS love-3s/3s
'*His$_1$ mother loves Piita$_1$.'

b. Anaana-∼*ata* Piita nagligi-ja∼a
mother.3s/ERG Piita-ABS love-3s/3s
'His$_{1/2}$ mother loves Piita$_1$.'

This is exactly the same pattern as in the accusative language Russian.

14. Russian Reflexive Possessives

(15) *Russian Reflexive Possessives*:

a. Ol′ga ljubit svoju mamu
Ol′ga-NOM loves her.REFL-ACC mother-ACC
'Ol′ga loves her mother.' (her = Ol′ga)

b. Ol′ga ljubit eë mamu
Ol′ga-NOM loves her-ACC mother-ACC
'Ol′ga loves her mother.' (*her = Ol′ga)

(16) *Impossible anaphoric binding into external arguments*:

a. *Svoja mama ljubit Ol′gu
her.REFL-NOM mother-NOM loves Ol′ga-ACC
'*Her$_1$ mother loves Ol′ga.'

b. Eë mama ljubit Ol′gu
her-NOM mother-NOM loves Ol′ga-ACC
'Her$_{1/2}$ mother loves Ol′ga$_1$.'

15. Weak Crossover

Weak crossover is a further diagnostic to determine argument hierarchies in syntax (via asymmetric c-command).

(17) *Weak crossover in English*:

a. Who$_1$ t$_1$ loves his$_1$ mother ?
b. *Who$_2$ did his$_2$ mother love t$_2$?

The same effect occurs in the ergative language Nisgha.

(18) *Weak crossover in Nisgha* (Tsimshian, Western Canada):

a. næt ʔæn-sip′ən-s nɔx^w-t
who-3E REL-love-DM mother-3s
'Who$_1$ loves his$_1$ mother?'

b. næ-gat ɬ ti-sip′ən-s nɔx^w-t
who-one ND FOC-love-DM mother-3s
'*Who$_1$ does his$_1$ mother love?'
'Who$_1$ does his$_2$ mother love?'

16. Active Argument Encoding Patterns 1

A consequence of the analysis:
Ergative case can only be assigned in *transitive* environments. Therefore, active patterns (as in Basque, Guaraní, Hindi, Georgian) should not exist.
Bobaljik's (1993) assumption (also see Laka (1993), Nash (1996), Bittner & Hale (1996b), and many others):
Unergatives are transitive!
In languages with an active ergative argument encoding pattern, what looks like an intransitive verb is in fact a transitive verb with a hidden object (which can, e.g., be overtly realized as a *cognate object* ('dream a dream')); sometimes the presence of the internal argument is indicated by overt agreement morphology (Basque).

Note:
This is in line with certain theories of argument structure, e.g., the approach taken in Hale & Keyser (2002).
Question: What about pure ergative encoding patterns, as in Yup′ik, Archi, Sierra Popoluca? In these languages, the internal argument of the relevant verbs is *incorporated into V*; hence, V becomes intransitive.

17. Active Argument Encoding Patterns 2

A *minimal pair*: Yup′ik vs. Basque. (Both languages are pro-drop languages; from the absence of an overt argument, one cannot tell whether it is present in syntax or not.)

(19) *Yup′ik*:

a. John-am ner-aa
John-ERG eat-3s/3s
'John ate it.' *not*: 'John ate.'

b. John ner′-uq
John-ABS eat-3s
'John ate.' *not*: 'John ate it.'

(20) *Basque*:

a. Jon-ek jaten du
Jon-ERG eat AUX
'Jon ate it.'

b. Jon-ek jaten du
Jon-ERG eat AUX
'Jon ate.'

18. Potential Problems

1. The correlation with morphological marking (ERG,ACC vs. NOM,ABS) is not straightforward.
2. Does the approach to active patterns based on Basque generalize to all languages that instantiate this pattern?
3. How can person-based, aspect-based, or clause-type based split ergativity be integrated into the analysis?
4. What about the well-established cases of syntactic ergativity?
5. The ergative/accusative parameter is closely tied to *movement* of NP arguments.
6. It is likely that NPs can check (or assign, or valuate) case without undergoing movement; see the concept of *Agree* in Chomsky (2001, 2005).

19. Murasugi's (1992) Analysis

20. Murasugi (1992): Basic Assumptions 1

- The cases of primary arguments are determined by two different syntactic heads K_1, K_2 (e.g.: $K_1 = Agr_s$, $K_2 = Agr_o$). In V_i contexts, the two language types are identical (only K_1 can determine case). In V_t contexts, K_2 is "strong" in ergative languages; and K_1 is "strong" in accusative languages.

  Assumption: Strong K attracts the highest NP argument.

  Consequence: Embedded vs. nesting paths in ergative vs. accusative languages.

1. ERG, ACC → K_2
2. NOM, ABS → K_1

(Murasugi (1992), Jelinek (1993))

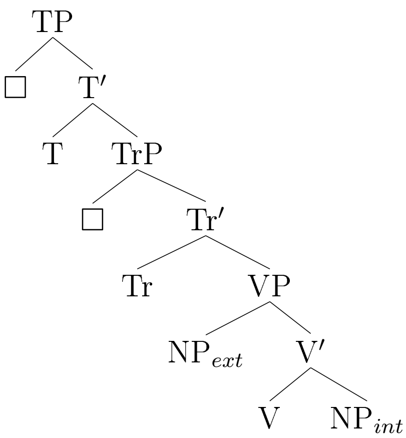
21. Murasugi (1992): Basic Assumptions 2

Murasugi's (1992) main idea:

- The assumptions about syntactic phrase structure are similar to those made in Chomsky (1993), Bobaljik (1993).
- However, case assignment is reversed.
- *ergative = accusative, nominative = absolutive.*
- The distinction between crossing paths and nesting paths is crucial.

22. Clause Structure

(21)



23. Remarks on Clause Structure

Murasugi's phrase structure is modern; e.g., it anticipates the analysis in Chomsky (1995, 2001):

- Tr is nowadays usually called v.
- Agr_O and Agr_S are gone (cf. the meta-gramamtical tenet that there can be no semantically uninterpretabale functional projections; see Chomsky (1995)).

Difference between TrP and vP:

- Tr checks/assigns *structural case* (so does v).
- Tr does not introduce an *external argument* NP_{ext} (in contrast to v).

24. Assumptions about Case Assignment 1

Accusative pattern:

1. T checks nominative (case and agreement).
2. Tr checks accusative (case and agreement).

Ergative pattern:

1. T checks absolutive (case and agreement).
2. Tr checks ergative (case and agreement).

Markedenss:

1. The case that is checked by T is an unmarked case (morphologically less marked, or not marked at all; citation form).
2. The case that is checked by Tr is a marked case (morphologically more marked, not a citation form)

25. Assumptions about Case Assignment 2

- NPs bear case (including morphological markers); however, (structural) case must be checked.
- Case is checked by movement of an NP to the specifier of T/Tr.
- Case-driven movement takes place in the syntax (overtly) or at LF (= an abstract level of representation, i.e., covertly).
- Syntactic movement is triggered by *strong features*. LF movement is triggered by *weak features*.

26. Further Prerequisites

Φ-features:

1. Φ-features are located on NPs.
2. Φ-features are located on V, for all primary arguments (NP_{ext}-V_t, NP_{ext}-V_i, NP_{int}-V_t, NP_{int}-Vi).
3. Φ-features are *not* located on T or Tr.
4. In order to check Φ-features of V and NP, V must undergo movement to F, and NP must undergo movement to SpecF (where F is a functional head).

Tense features:

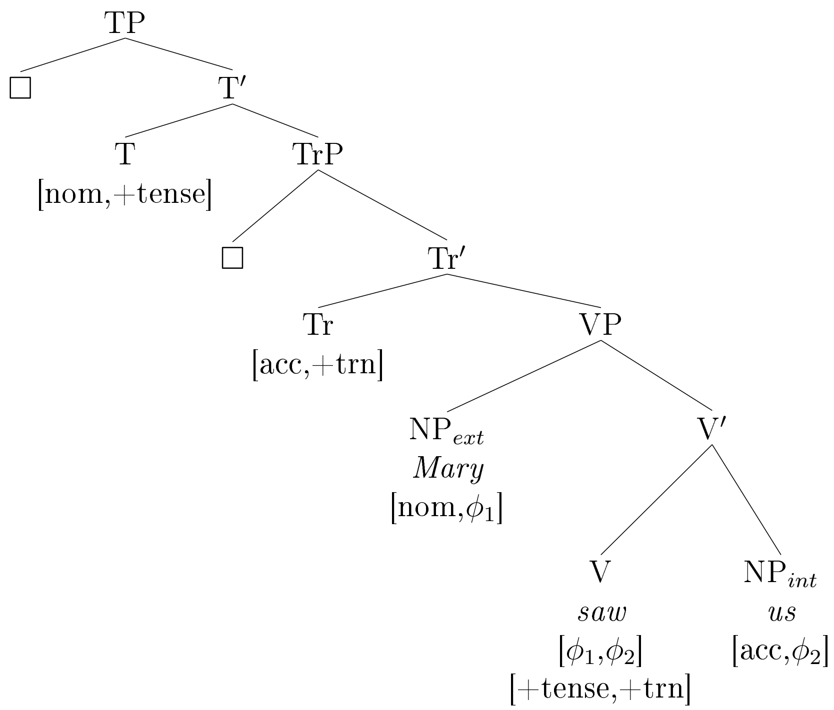
1. T:[+tense] ⟶ finite clause
2. T:[–tense] ⟶ non-finite clause

Transitivity features:

1. Tr: [+trans] ⟶ V takes two primary arguments.
2. Tr: [–trans] ⟶ V takes one primary argument.

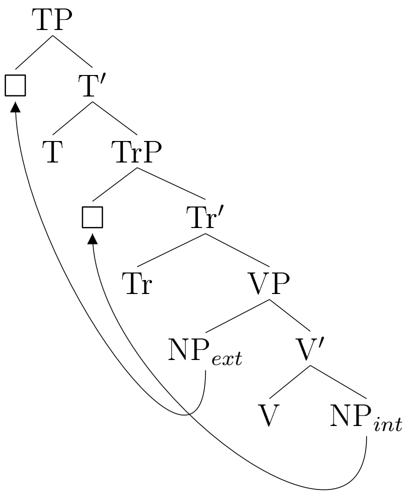
27. Example

(22)

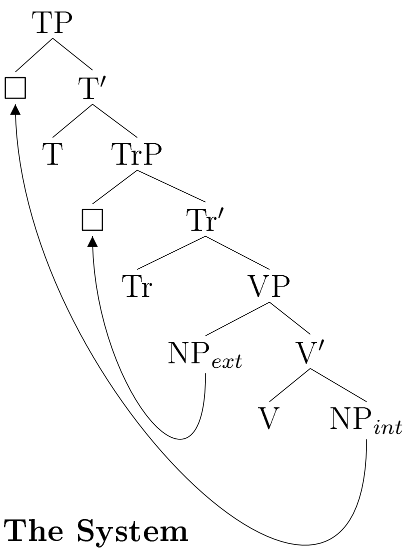


Note:
There is no alternation of the two structure-building operations Merge and Move yet (Chomsky (2001, 2005)). Rather:
All movement operations (Move) follow all basic structure-building operations (Merge).

28. Accusative pattern: crossing paths

(23)


29. Ergative pattern: nesting paths

(24)


30. The System

(25) *The ergative/accusative parameter*:

a. The *case feature of T* is strong in an accusative language.

b. The *case feature of Tr* is strong in an ergative language.

(26) *Economy principles* (moderatley updated terminology):

a. *Minimal Goal* ('Closest Available Source'):
At all levels of the derivation, a *probe* attracts the closest available NP.

b. *Minimale Probe* ('Clostest Featured Target'):
At all levels of the derivation, a *goal* NP must be moved to the closes available probe.

c. *Procrastinate*:
A syntactic operations applies as late as possible.
("Covert (LF) movement is cheaper than overt movement.)

Note: "goal" here stands for the target of the operation, it does not refer to the Θ-role of the same name.

31. Consequences 1

Assumptions about case-driven movement of NPs:

- At a given level of representation, a goal NP has to be the NP that is closes to the minimal probe *before any movement takes place* in order to be eligible for movement.

- A goal NP has to be available for movement; i.e., it must not have checked its case features yet.

Consquence:

- Only one NP can undergo case-driven movement in overt syntax: NP_{ext} ('subject').

- Case-driven movement of NP_{int} ('object') takes place at LF.

32. Consequences 2

"Suppose that both T and Tr have strong Case features [...], requiring movement to their Specs at S-structure [...] The closest NP to both T and Tr is [...] the subject. However, this NP cannot satisfy the feature requirements of both functional heads simultaneously. Therefore, unless something else is inserted in SpecT to satisfy T, the derivation will crash." (p.25-26)
"At any one level, then, there will be neither Crossing nor Nested Paths (i.e., the result of both subject and object raising), but only independent movements of subjects to functional specs."

33. Consequences 3

Comment:
This last consequence is potentially empirically problematic. However, closer inspection reveals that it is probably not essential.

- Given a minimally revised notion of *availability* in the definition of the economy principles in (26), both *crossing and nesting paths* are permitted on a single level or representation.

34. Procrastinate

Question:
Why is the constraint *Procrastinate* needed?
Answer:
Procrastinate ensures that movement that is triggered by weak features is confined to LF.
(It is not so clear whether this assumption is actually needed in the present context.)
Note:
Movement of an internal argument NP_{int} at LF may violate the *Strict Cycle Condition* (see Chomsky (1973)) (or the *Extension Condition* of Chomsky (1993)) verletzen.

35. Transitive Clauses, Accusative Pattern

(27) a. *Base structure before movement*:
$T_{[+tense],[nom]}$ $\mathrm{Tr}_{[+trn,acc]}$ [John saw Mary]
b. *Overt syntactic movement*:
John_1 $\mathrm{T}_{[+tense],[nom]}$ $\mathrm{Tr}_{[+trn,acc]}$ [t_1 saw Mary]
c. *Mary_2 $\mathrm{T}_{[+tense],[nom]}$ $\mathrm{Tr}_{[+trn,acc]}$ [John saw t_2]
d. *Covert LF movement*:
John_1 $\mathrm{T}_{[+tense],[nom]}$ Mary_2 $\mathrm{Tr}_{[+trn,acc]}$ [t_1 saw t_2]

36. Transitive Clauses, Ergative Pattern

(28) *Inuktitut* (Inuit, SOV):

Jaani_1-up [t_1	tuktu-Ø	malik-p-a-a]	$\mathrm{Tr}_{[+trn,erg]}$
John-ERG	Karibou-NOM	follow-Ind-Tr-3sE.3sN	

'John followed the Karibou.'

(29) *Mam* (Maya, VSO):

ma	Ø-jaw	t-tx'ee?ma-n_1	Cheep_2	$\mathrm{Tr}_{[+trn,erg]}$ [t_2 t_1	tzee?]
REC	3sN-DIR	3sE-cut-DS	José		tree

'José cut the tree.'

37. Intransitive Clauses

Prediction:

- There is movement of the sole NP argument (in need of case checking) to SpecT *in both language types*. The reason for this uniform behaviour is that Tr does not have a case feature in this context.
- In accusative systems, this movement operation takes place overtly. (Reason: the case feature of T is strong.)
- In ergative systems, this movement operation takes place covertly (at LF). (Reason: The case feature of T is weak.)
  (Note: Murasugi acknowledges that there might be a problem lurking here; see her footnote 21, p.40.)

38. Consequences: Chomsky/Bobaljik vs. Murasugi

Consequence:
Chomsky (1993), Bobaljik (1993):

1. Transitive constructions are identical in ergative and accusative argument encoding systems.
2. Intransitive constructions are different in ergative and accusative argument encoding systems.

Murasugi (1992):

1. Transitive constructions are different in ergative and accusative argument encoding systems.
2. Intransitive constructions are identical in ergative and accusative argument encoding systems.

39. Intransitive Clauses: Unergative Verbs

Assumption: *NP_{ext} is merged in SpecV.*

(30) *English*:
  a. $T_{[+tense,nom]}$ [John sang]
  b. $John_1$ $T_{[+tense,nom]}$ [t_1 sang]

(31) *Inuktitut*:

[Jaani pisuk-p-u-q] $T_{[+tense,nom]}$
John-NOM go-IND-INTR-3sN

'John went.'

(32) *Mam*:

ma Ø-beet$_1$-$T_{[+tense,nom]}$ [xuʔj t_1]
REC 3sN-go woman

'The woman went.'

40. Intransitive Clauses: Unaccusative Verbs

Assumption: *NP_{int} is merged in CompV.*

(33) *Englisch*:

a. $T_{[+tense,nom]}$ [arrived the man]
b. the man$_1$ $T_{[+tense,nom]}$ [t_1 arrived]

(34) *Jacaltec* (Maya):

a. x-Ø-'ich-i munil
ASP-3sN-begin-INTR work
'Work began.'
b. ch-Ø-aw-ich-e munil
ASP-3sN-2sE-begin-Tr work
'You begin the work.'

41. Active Patterns

Note:
As with Bobaljik (1993), ergative case for truly intransitive verbs is unexpected. The solution of this problem will have to be similar.

42. Potential Problems

1. The ergative/accusative parameter is closely tied to *movement* of NP arguments.

2. It is likely that NPs can check (or assign, or valuate) case without undergoing movement; see the concept of *Agree* in Chomsky (2001, 2005).

3. In contrast to Move, Agree does not dependent on *strength* of features; cf. *uninterpretability*, probe features.

4. Is it possible to come up with a similar model of parametrization under an Agree-based (rather than Move-based) approach?

5. Probably not: A violation of the *Strict Cycle Condition* will otherwise invariably occur in accusative languages.

6. Murasugi's analysis can avoid this general problem only by assuming that case is checked on two separate levels of representation (S-structure, LF). If all case checking takes place on a single level of representation, there is a problem (compare the concept of (*multiple spell-out of phases*).

43. Bittner & Hale's (1996) Analysis

44. Bittner & Hale (1996b): Background

- The cases of primary arguments are determined by two different syntactic heads K_1, K_2 (K_1 = I, K_2 = V). In ergative languages, K_1 determines ergative case, and K_2 does not determine a structural case. In accusative languages, K_1 does not determine a structural case, and K_2 determines accusative case. The remaining (or single) argument receives C(omp)-related *default case* ('K-Filter').

  1. ERG $\rightarrow$ K_1
  2. ACC $\rightarrow$ K_2
  3. NOM, ABS $\rightarrow$ Default

(Bittner & Hale (1996b))

45. Bittner & Hale (1996b): Basic Assumptions

Nominal arguments can be *KPs* ('Case phrases'), or DPs, or even bare NPs:

(35) $[_{KP}$ K $[_{DP}$ D $[_{NP}$ N ...]]]

Clause Structure:
The external argument is merged by adjunction to VP; this produces a *small clause*. (Order is irrelevant here.)

(36) $[_{CP}$ C $[_{IP}$ I $[_{VP}$ $\{KP/DP\}_{ext}$ $[_{VP}$ V $\{KP/DP\}_{int}$]]]]

- In ergative systems, I Case-binds KP_{ext}: ERG.
- In accusative systems, V Case-binds KP_{int}: ACC.
- The remaining argument in a transitive context is a DP (rather than KP), which gets default Case from C.

46. Definitions 1

(37) *K Filter* (NOM):
An argument chain headed by a K-less nominal (DP or NP) contains a position that is c-commanded and governed by K or C, and does not contain any Case-bound position.

(38) *Oblique Case Realizations* (DAT, INS, ABL; for Inuit):
If α Case-binds an overt empty-headed KP β and does not meet the conditions of (39-ab), then the empty K of β is realized as

a. DAT, if α is V and is not c-commanded by β.
b. INS, if α is V and is c-commanded by β.
c. ABL, if α is N and is not c-commanded by β.

(39) *Direct Case Realizations* (ERG, ACC):
If α *Case-binds* an overt empty-headed KP β, then the empty K of β is realized as

a. ERG, if α is I;
b. ACC, if α is V and has an adjoined D.

47. Definitions 2

(40) *Case-Binding*:
Let α be a head that *delimits a clause*, and let β be an argument. Then α Case-binds β, and β's head, iff

a. α *locally c-commands* β.
b. α *governs* a *Case competitor* for β.

(41) *Delimiting heads*:
A small clause is delimited by its lexical head, from below, and by any governing functional head, from above.

(42) *Local C-Command*:
Let α be a head that delimits a small clause, and let β be an argument. Then α locally c-commands β, iff:

a. α c-commands β, and
b. no other argument, or head that delimits a small clause, both c-commands β and is c-commanded by α.

(43) *Case Competitor*:
γ is a Case competitor for an argument β, iff γ is a K-less nominal that is (in a chain with) a *coargument* of β, or a *pseudo coargument*.

48. Definitions 3

(44) *Coargument*:
Let β and γ be arguments. Then γ is a coargument of β, iff (a) and (b) hold:
a. *Locality*: Some head that governs or *A-projects* γ also governs or A-projects β.
b. *Independence*: γ excludes β and is not in a chain with β.

(45) *Government*:
α governs β, iff:
a. α *m-commands* β.
b. There is no *barrier* between α and β.

(46) *M-Command*:
α m-commands β, iff α does not *include* β, and every maximal projection that includes α also includes β.

(47) *C-Command*:
α c-commands β, iff α *excludes* β, every projection that includes α also includes β, and at most one projection segment dominates α but not β.

(48) *Barrier*:
A barrier between α and β is an XP, γ, with the X^0 head, γ^0, such that
a. γ excludes α, includes β, and is not an extended projection of β;
b. γ^0 c-commands β, and neither α nor any adjunct of α binds γ^0.

49. Ergative/Absolutive Patterns in Transitive Contexts 1

(49) $[_{\text{CP}}$ C $[_{\text{IP}}$ I $[_{\text{VP}}$ Arg_{ext} $[_{\text{VP}}$ V Arg_{int}]]]]

What we want to derive:

1. Arg_{ext} is a KP Case-bound by I (then it is assigned ergative).
2. Arg_{int} is a DP that obeys the K Filter (then it has no case: nominative/absolutive).

50. Ergative/Absolutive Patterns in Transitive Contexts 2

Case-Binding of KP_{ext} by I and K Filter for DP_{int}:

1. If I is to Case-bind Arg_{ext} as a KP, then I must be a head that delimits a clause. It is such a head (it delimits the VP small clause from above because it is a governing functional head).
2. If I is to Case-bind Arg_{ext} as a KP, then I must locally c-command Arg_{ext}. It does: There is no other argument (or small-clause-delimiting head) that

intervenes between I and Arg_{ext}. (In particular, Arg_{int} does not intervene: it is lower in the structure.)

51. Ergative/Absolutive Patterns in Transitive Contexts 3

3. If I is to Case-bind Arg_{ext} as a KP, then I must govern a Case competitor for Art_{ext}. I does not govern such a Case competitor for Arg_{ext} in the structure in (49). The reason is that Arg_{int} is protected by government by I through a *barrier*, viz., VP. However, *there are two ways to make I govern* $\textit{Arg}_{int}$ *after all*: First, Arg_{int} can *move* to SpecI (movement may cross a barrier as defined here). Second, Arg_{int} may be governed by I because head movement of V to I opens up the barrier and makes government of I into the VP possible (V is then an adjunct of I that binds its trace (γ^0). Thus, for I to govern Arg_{int} as a Case competitor for Arg_{ext}, either V or Arg_{int} has to move out of the VP. Furthermore, if I is to Case-bind Arg_{ext}, Arg_{int} must be a K-less nominal: a DP. Finally, Arg_{int} must be a Case competitor for Arg_{ext}. It is because they are co-arguments. (They are co-arguments because they are A-projected by the same head – V –, and because they are not in a dominance or chain relation.)

4. As a result, we derive that I Case-binds KP_{ext} if the internal argument is a K-less nominal DP_{int} that either moves out of VP or shows up in a VP out of which the verb has moved to I.

52. Ergative/Absolutive Patterns in Transitive Contexts 4

5. If Arg_{int} is a DP, it obeys the K Filter. This means that it must be governed by C, and is not Case-bound itself. It cannot be Case-bound since it is not *locally* c-commanded by a clause-delimiting head; and we can assume that C governs Arg_{int} (IP is transparent, e.g., because of I-to-C movement).

6. This then means that given a structure like (49), the external argument is a KP that is assigned ergative, and the internal argument is a DP that has default case (nominative/absolutive).

(50) *Two ways to get an ergative encoding pattern:*
  a. *Movement of* $\textit{NP}_{int}$ *to SpecI:*
  $[_{\text{CP}}\ [_{\text{IP}}\ DP_2\ [_{\text{I}'}\ [_{\text{VP}}\ KP_1\ [_{\text{VP}}\ V\ t_2\ ]]\ I\ ]]\ C\ ]$
  b. *Movement of V to I:*
  $[_{\text{CP}}\ [_{\text{IP}}\ –\ [_{\text{I}'}\ [_{\text{VP}}\ KP_1\ [_{\text{VP}}\ t_{\text{V}}\ DP_2\ ]]\ V\text{-}I\ ]]\ C\ ]$

Conclusion:
Ergative case shows up on an external argument, but only in the presence of a lower coargument.

53. Syntactic vs. Morphological Ergativity

The two options in (50) cover syntactic vs. morphological ergativity:

- *Syntactic Ergativity*:
  If DP_{int} moves to SpecI, it becomes the highest argument. Syntactic operations referring to the notion of *highest argument* ('subject') will now treat Arg_{int}-V_t in the same way as Arg_{ext}-V_i and Arg_{int}-V_i (and will treat Arg_{ext}-V_t differently).

- *Morphological Ergativity*:
  If DP_{int} stays in situ, within VP (and V moves to I), it maintains 'object properties'. Syntactic operations referring to the notion of *highest argument* ('subject') will now treat Arg_{ext}-V_t in the same way as Arg_{ext}-V_i and Arg_{int}-V_i (and will treat Arg_{int}-V_t differently).

Assumption:
Dyirbal, Inuit: syntactic ergativity (but recall Bobaljik (1993) on reflexives in Inuit; see (13))
Samoan, Warlpiri: morphological ergativity

54. Active Patterns

There is no obvious way to account for an ergative case on an external argument of a transitive verb, as in Basque, Hindi, Guaraní, and Georgian. Strategy (well-known by now): *Unergative verbs are hidden transitive verbs.* In Basque, the evidence for this may not be poor: "Unergatives regularly take the form of light verb constructions," as in *hitz egin* ('word do', 'speak'). However, things are not so clear in Georgian, where the verbs that are involved do not look like light verb constructions ('Funktionsverbgefüge'); also see Nash (1996).

(51) *Active patterns in Georgian* (past-tense, perfective aspect only):

a. Vano-m gamozarda dzma
Vano-ERG$_1$ 3.SG$_2$.raised.3.SG$_1$ brother-NOM$_2$
'Vano raised his brother.' (transitive)

b. Bavšv-ma itira
child-ERG$_1$ cried.3.SG$_1$
'The child cried.' (unergative intransitive)

c. Rezo gamoizarda
Rezo-NOM$_2$ grew.3.SG$_2$
'Rezo grew up.' (unaccusative intransitive)

55. Why Ergative Patterns are Simpler

We have seen that I Case-binds Arg_{ext} in (52). Can Arg_{int} also be Case-bound?

(52) $[_{\text{CP}}$ C $[_{\text{IP}}$ I $[_{\text{VP}}$ Arg$_{ext}$ $[_{\text{VP}}$ V Arg$_{int}$]]]]

Two candidates: I and V.

1. I cannot Case-bind Arg$_{int}$ in (52) because I *does not locally c-command* Arg$_{int}$ (Arg$_{ext}$ intervenes).

2. V cannot Case-bind Arg$_{int}$ either because V *does not govern a Case competitor* for Arg$_{int}$ (Arg$_{ext}$ is not governed by V because V does not m-command it: VP includes V but not Arg$_{ext}$ in the VP-Adj position.

The latter consequence follows in an even simpler way (without invoking the inclusion/exclusion distinction) if external arguments are base-generated in the specifier of vP (rather than in a VP-adjoined position).

Consequence: *Accusative patterns are more marked than ergative patterns; something extra needs to be said about the former!*

56. Towards Accusative Encoding Patterns

Recall the notion of Case competitor in (53), *pseudo coargument* still needs to be defined:

(53) *Case Competitor*:
γ is a Case competitor for an argument β, iff γ is a K-less nominal that is (in a chain with) a *coargument* of β, or a *pseudo coargument*.

(54) *Pseudo Coargument*:
Let β be an argument; δ, a head that delimits a small clause; and γ; a head adjoined to δ. Then γ is a pseudo coargument of β, iff (a) and (b) hold:
a. Locality: δ governs β, and γ c-commands β.
b. Independence: γ is not in a chain with the X^0 head of β, and β is not in a chain with the subject of the small clause delimited by δ.

Consequences:

- Locality: γ can never be a pseudo coargument of Arg$_{ext}$.

- Independence: Pseudo coarguments only come into being if there is more than one argument in the clause.

57. Antipassive

(55) *Antipassive Alternation in Chukchee* (Paleosibirian; Comrie (1979)):
a. Yemronə-na qərir-ərkən-in ekək
Yemron-ERG$_1$ search-PRS-3.SG$_1$.3.SG$_2$ son-NOM$_2$
'Yemron is searching for his son.'

b. Yemron ine-lqərir-ərkən (akka-gtə)
Yemron-NOM$_1$ APASS-search-PRS.3SG$_1$ (son-DAT)
'Yemron is searching (for his son).'

Analysis:

1. The APASS morpheme is an N head adjoined to V; it is a pseudo coargument for Arg$_{int}$, which accordingly is a Case-bound KP.
2. KP$_{int}$ is Case-bound by V and gets DAT rather than ACC case for the simple reason that the pseudo coargument is an *N* rather than a *D* (see (38), (39)).
3. Arg$_{ext}$ cannot be Case-bound anymore in this configuration because there is no coargument (or close pseudo coargument) that might act as a Case competitor (i.e., be K-less – the Case-bound Arg$_{int}$ certainly is not).
4. Arg$_{ext}$ therefore must be DP and gets default case from C.

58. Accusative Encoding Patterns

Assumptions:

1. Accusative patterns can be traced back to a V-adjoined pseudo-argument, as in antipassives. The only difference: The adjoined item is *D* rather than *N*; hence, the Case realized for a KP Case-bound by V-D is ACC rather than, say, DAT.
2. DP$_{ext}$ must be governed by C, which can take place either via raising to SpecI, or via head movement of I to C (just as in ergative encoding systems). Result: English-type vs. Japanese/German-type accusative languages.

(56) *Two accusative patterns*:

a. *Movement of DP$_{ext}$ to SpecI*:
$[_{CP}$ C $[_{IP}$ DP$_1$ $[_{I'}$ $[_{VP}$ t$_1$ $[_{VP}$ V KP$_2$ $]]$ I $]]]$

b. *Movement of I to C*:
$[_{CP}$ C-I $[_{IP}$ – $[_{I'}$ $[_{VP}$ DP$_1$ $[_{VP}$ V KP$_2$ $]]$ t$_I$ $]]]$

59. Three-Way Systems 1

Like optimality-theoretic analyses, but in contrast to the other two minimalist types of approach, the present analysis can in principle capture a co-occurrence of ERG and ACC. Languages like Antekerrepenhe (Arandic; Central Australia) and Nez Perce (Penutian; Oregon) seem to instantiate this rare pattern.

(57) *Antekerrepenhe*:

a. Arengke-le aye-nhe ke-ke
   dog-ERG me-ACC bite-PST
   'The dog bit me.'
b. Apwerte-le athe arengke-nhe we-ke
   stones-INS I-ERG dog-ACC pelt-PST
   'I pelted the dog with stones.'
c. Arengke nterre-ke
   dog-NOM run-PST
   'The dog ran.'

60. Three-Way Systems 2

Analysis:

1. There must be an additional pseudo coargument for Arg_{ext} somewhere in the structure, so that the latter can be Case-bound by I even though Arg_{int} is Case-bound by V.

2. There is an additional *NP shell* on top of the Arg_{int} KP. The N head of the NP shell undergoes incorporation to D in V. Now Arg_{ext} and Arg_{int} both have Case competitors, and two structural cases can be realized.

(58) *VP Structure in Three-Way Systems*:
$[_{\text{VP}}\ \text{KP}_{ext}\ [_{\text{VP}}\ [_{\text{V}'}\ [_{\text{NP}}\ [_{\text{N}'}\ [_{\text{KP}_{int}}\ K\ [_{\text{DP}}\ D\ [_{\text{NP}}\ N\ ]]]\ t_{\text{N}}\ ]]\ [_{\text{V}}\ [_{\text{D}}\ N\ D\ ]\ V\ ]]]]$

Claim:
This is indicative of a more general feature of Bittner & Hale's analysis: The system is quite flexible (more so than the analyses developed by Bobaljik and Murasugi, e.g.), but this is mainly due to the fact that highly articulate structures, and subtle structural differences (e.g., N vs. D) between languages, are postulated.

Chapter 4

A New Approach

1. Goal

Goal:
A new minimalist analysis of accusative vs. ergative patterns of argument encoding (via case marking or agreement) that meets the criteria postulated before (e.g. no construction-specific rules, no movement, erg=acc, nom=abs, etc.), and that is grounded in Murasugi's (1992) approach. The proposal is based on the observation that indeterminacies may arise in the application of *Merge* and *Agree* (see Chomsky (2000, 2001)), given that they both obey an Earliness requirement (see Pesetsky (1989), Pesetsky & Torrego (2001)).

Basic claim:
A principled resolution of one such indeterminacy (on the vP cycle) in one or the other direction yields an accusative or ergative encoding pattern for arguments.

2. Background Assumptions 1

Syntactic structure is created incrementally, bottom-up, by the elementary operations Merge and Agree, and by Move (which is a special case of Merge: *internal* vs. *external* Merge; Chomsky (2005), and which will not play a major role in what follows).

(1) *Two types of features that drive operations*:
  a. Structure-building features (edge features, subcategorization features) trigger Merge: [•F•]
     (Svenonius (1994), Collins (2003), Sternefeld (2003), Heck (2004))
  b. Probe features trigger Agree: [∗F∗]
     (Sternefeld (2003))

(2) *Merge Condition*:
Structure-building features ([•F•]) participate in Merge.

(3) *Agree Condition*:
Probes ([$*$F$*$]) participate in Agree.

3. Background Assumptions 2

(4) *The operation Merge*:
α can be merged with β, yielding $\{\alpha, \{\alpha, \beta\}\}$, if α bears a structure-building feature [•F•] and F is the label of β.

(5) *The operation Agree*:
α agrees with β with respect to a feature bundle Γ iff (a), (b), and (c) hold:
a. α bears a probe feature [*F*] in Γ, β bears a matching goal feature [F] in Γ.
b. α m-commands β.
c. There is no δ such that (i) and (ii) hold:
   (i) δ is closer to α than β.
   (ii) δ bears a feature [F] that has not yet participated in Agree.

4. Background Assumptions 3

Note:

1. (5-b) permits an Agree relation between a head and its specifier, as seems natural (but see, e.g., Chomsky (2004)).
2. (5-c) presupposes a notion of closeness.

(6) *Closeness*:
δ is closer to α than β if the path from δ to α is shorter than the path from β to α.

(7) *Path* (Müller (1998, 130); also cf. Pesetsky (1982, 289), Collins (1994, 56)):
The path from X to Y is the set of categories Z such that (a) and (b) hold:
a. Z is reflexively dominated by the minimal XP that dominates both X and Y.
b. Z dominates X or Y.

The length of a path is determined by its cardinality.

Consequences:
(i) The specifier and the complement of a head qualify as equally close to the head.
(ii) The specifier of a head is closer to the head than a category that is further embedded in the complement of the head.

5. Background Assumptions 4

Further general assumptions (Chomsky (2000, 2001)):

1. *Clause structure*:
   Basic clause structure has CP, TP, vP, and VP.

2. *Numerations*:
   Lexical items that are to participate in derivations are selected from the lexicon pre-syntactically, and assembled in a numeration N (or lexical array).

3. *Workspace* (Frampton & Gutman (1999), Hornstein (2001)):
   The workspace of the derivation comprises items in the numeration and phrases that have been created independently.

4. *Merge of argument DPs*:
   DP_{int} is merged in VP, DP_{ext} is merged in vP, as a specifier.

5. *Argument encoding and functional heads*:
   T and v are involved in the structural encoding of primary arguments (i.e., DP_{ext} and DP_{int} arguments for which no inherent/lexical CASE is specified), by bearing features that act as probes and thus trigger Agree operations.

6. Background Assumptions 5

More specific assumptions about argument encoding:

1. There is one structural argument encoding feature: CASE.

2. CASE can have two values: ext(ernal) and int(ernal) (determined with respect to vP, the predicate domain).

3. [CASE:ext] = nominative/absolutive, [CASE:int] = accusative/ergative (Murasugi (1992)).

4. [CASE] features figure in Agree relations involving T/v and DP, as in (8).

(8) *The role of T and v in argument encoding*:
   a. T bears a probe [*CASE:ext*] that instantiates a matching [CASE:ext] goal on DP.
   b. v bears a probe [*CASE:int*] that instantiates a matching [CASE:int] goal on DP.

7. Case and Agreement

Observation:
Case-marking and agreement-marking both depend on an Agree relation between T/v and DP, and thus qualify as two sides of the same coin.

(9) *Argument encoding by case or agreement*:

a. Argument encoding proceeds by case-marking if [CASE:α] is morphologically realized on DP.
b. Argument encoding proceeds by agreement-marking if [*CASE:α*] is morphologically realized on T/v.

(Some extra will have to be said about cases where agreement is not case-based, but, e.g., argument type-based (external vs. internal argument).)

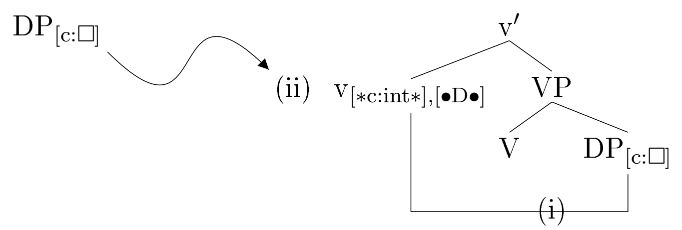
8. Merge vs. Agree 1

A conspicuous property:
v (unlike T or V) plays a dual role: It triggers Merge of NP$_{ext}$ (by a [•D•] feature), and it also triggers an Agree operation (by its [*CASE:int*] feature). This dual role has far-reaching consequences for the nature of argument encoding.

An indeterminacy:
Consider a simple transitive context, with two arguments DP$_{int}$, DP$_{ext}$. Suppose that the derivation has reached a stage Σ where v has been merged with a VP containing DP$_{int}$, with DP$_{ext}$ waiting to be merged with v in the workspace of the derivation. At this point, an indeterminacy in rule application arises: The next operation could be either Agree(v,DP$_{int}$) (see (i)) or Merge(DP$_{ext}$,v) (see (ii)). The Agree Condition demands the former operation, and the Merge Condition demands the latter.

9. Merge vs. Agree 2: The Dilemma

(10) *Stage Σ:*



10. An Optimality-Theoretic Solution

Solution:
Conflicts of this type are real and must be resolved by giving one constraint (the Merge Condition or the Agree Condition) priority over the other in the case of conflict, i.e., by ranking the requirements.

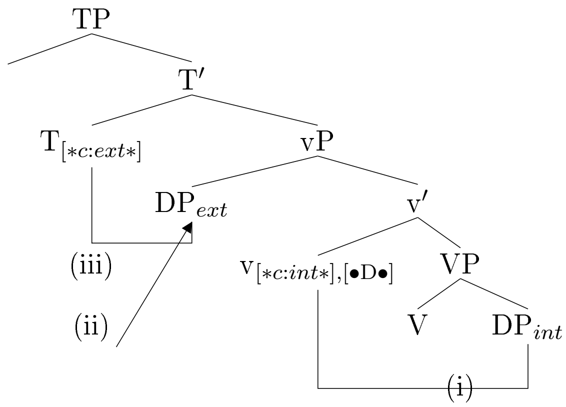
Note:
This is an instance of *optimization* in syntax, with minimal violability of the lower-ranked requirement; see Prince & Smolensky (2004). However, the optimization involved here is *extremely local* (competing candidates are derivational steps), which avoids the complexity

problems incurred by standard optimization procedures; see Heck & Müller (2000, 2006), Fischer (2004).

(11) *Rankings*:
  a. Accusative patterns: *Agree Condition* $\gg$ *Merge Condition*
  b. Ergative patterns: *Merge Condition* $\gg$ *Agree Condition*

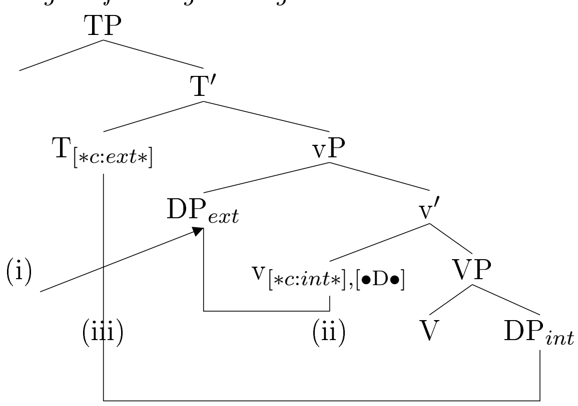
11. The Order of Elementary Operations 1

(12) *Agree before Merge: accusative*



12. The Order of Elementary Operations 2

(13) *Merge before Agree: ergative*



13. The Order of Elementary Operations 3

Remarks on the accusative pattern:

1. *Mechanics*:
   Given Earliness(Agree) $\gg$ Earliness(Merge), Agree(v,DP$_{int}$) applies first (step (i)) at stage Σ. Since v is marked [*CASE:int*], this ensures a [CASE:int] specification on DP$_{int}$. DP$_{ext}$ is merged in Specv in the next step (step (ii)). The derivation continues, merging T and vP, and then carrying out Agree(T,DP$_{ext}$), which instantiates [CASE:ext] on DP$_{ext}$ (step (iii)).

2. *Accusative, nominative*:
The morphological realization of an internal encoding feature [(*)CASE:int(*)] with Agree(v,DP_{int}) (by case or agreement) can be called accusative; the morphological realization of an external encoding feature [(*)CASE:ext(*)] with Agree(T,DP_{ext}) can be called nominative.

3. *Language types derived*:
This accounts for argument encoding in transitive contexts in accusative languages like Icelandic and Navajo: The internal argument is marked by the internal CASE, the external argument is marked by the external CASE.

14. The Order of Elementary Operations 4

Remarks on the ergative pattern:

1. *Mechanics*:
Given Earliness(Merge) $\gg$ Earliness(Agree), Merge(DP_{ext},v) must apply first (step (i)) at stage Σ. *DP_{ext} is now closer to v than DP_{int}*, and given that Agree relations are subject to a minimality requirement and require only m-command by the probe, the next operation will have to be Agree(v,DP_{ext}), in a specifier/head configuration (step (ii)). This instantiates [CASE:int] on DP_{ext}. Subsequently, T is merged, and Agree(T,DP_{int}) is carried out (step (iii)), with [CASE:ext] for DP_{int}.

2. *Ergative, absolutive*:
The morphological realization of an internal encoding feature [(*)CASE:int(*)] with Agree(v,DP_{ext}) can be called ergative; the morphological realization of an external encoding feature [(*)CASE:ext(*)] with Agree(T,DP_{int}) can be called absolutive.

3. *Language types derived*:
This accounts for argument encoding in transitive contexts in ergative languages like Archi and Sierra Popoluca: The internal argument is marked by the external CASE, the external argument is marked by the internal CASE.

15. Case Feature Specifications in Numerations

Nothing has been said about intransitive contexts so far.

Problem:
Unchecked probes lead to a crash of the derivation; hence, [*CASE:α*] must be absent on either T or v in the derivation if only one DP is present that has a feature [CASE:$\square$]. But on which one?

Claim:
Two principled solutions are available. Both rely on a *constraint on numerations*, viz., (14) (see Heck & Müller (2000), Fischer (2004), Heck (2004) for related constraints; also see Stabler (1996) on '*count invariants*').

(14) *Feature Balance* (holds of numerations):
For every feature [*F:α*], there must be a matching feature [F:$\square$].

The underlying idea is that a derivation that fails to provide a matching goal feature specification for each probe feature specification that it employs is doomed from the start, and should be excluded as soon as possible, i.e., in the numeration.

16. How to Respect Feature Balance

Consequence:
[*CASE:ext*] on T or [*CASE:int*] on v must be absent if there is only one D with a CASE feature in the numeration.

Assumption:
There are two possible ways to respect Feature Balance in numerations underlying intransitive contexts:

1. Preservation of the *unmarked* [*CASE*] feature.
2. Preservation of the *iconic* [*CASE*] feature (that matches the argument type in markedness).

17. Canonical Ergative Argument Encoding 1

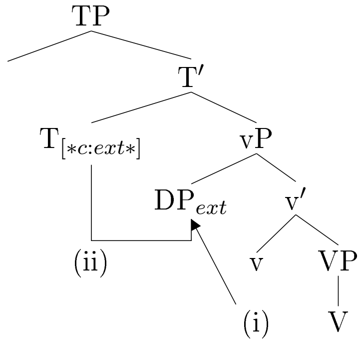
*Solution 1: Preservation of the unmarked [*CASE*] feature*

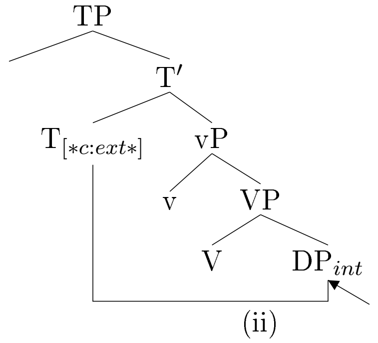
(15) *Unmarked vs. marked* CASE *features*:
a. [(*)CASE:ext(*)] (nominative/absolutive) → unmarked
(typically default CASE in syntax, and segmentally less complex in morphology (often default or zero))
b. [(*)CASE:int(*)] (accusative/ergative) → marked
(typically not default CASE in syntax, and segmentally more complex in morphology)

Consequence:
In intransitive contexts, [*CASE:ext*] on T has to be preserved, and [*CASE:int*] cannot be instantiated on v. Therefore, the sole argument of an intransitive predicate (DP_{ext} or D_{int}) is encoded by [(*)CASE:ext(*)] (nominative/absolutive), after Agree(T,DP_{ext}) or Agree(T,DP_{int}), which captures the situation in the language types discussed so far.

18. Canonical Ergative Argument Encoding 2

(16) a. *Nominative/absolutive with DP_{ext}-V_i* b. *Nominative/absolutive with DP_{int}-V_i*





19. Active Argument Encoding 1

*Solution 2: Preservation of the iconic (type-matching) [*CASE*] feature*

(17) *Unmarked vs. marked argument types*:

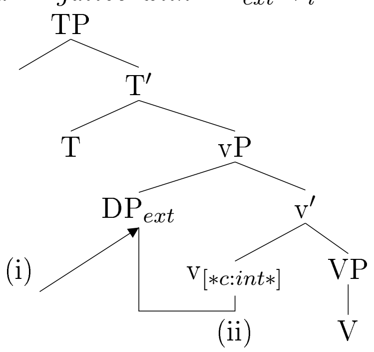
a. DP_{int} → unmarked
(merged within its predicate's projection, not requiring a special 'externalization' operation (Williams (1981)) in argument structure)

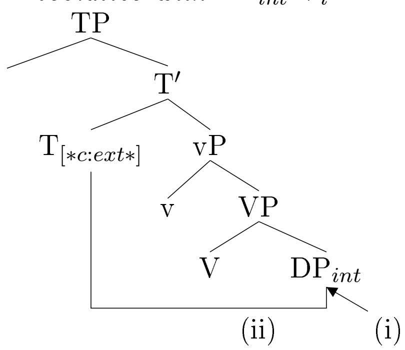
b. DP_{ext} → marked
(not merged within its predicate's projection, requiring a special 'externalization' operation)

Consequence:
(i) A marked feature specification ([*CASE:int*] on v) must show up in the numeration in the presence of a V taking an marked argument (DP_{ext}).
(ii) An unmarked feature specification ([*CASE:ext*] on T) occurs in the presence of a V taking an unmarked argument (DP_{int}).

20. Active Argument Encoding 2

(18) a. *Ergative with DP_{ext}-V_i* b. *Absolutive with DP_{int}-V_i*





21. Active Argument Encoding 3

Observation:
This makes it possible to account for active ergative argument encoding patterns in languages like Basque, Georgian, Hindi (with case) and Guaraní (with agreement) without invoking the assumption that unergatives are hidden transitives in these languages (but not in others).

(19) *Active ergative case-marking in Basque*:

a. Jon-Ø etorri da
Jon-ABS come:PTCP.PRF is:3.SG.INTR
'Jon came.'

b. Jon-ek saltatu du
Jon-ERG jump:PTCP.PRF have:3.SG.TR
'Jon jumped.'

c. Jon-ek ardo-a-Ø ekarri du
Jon-ERG wine-DET-ABS bring:PTCP.PRF have:3.SG.TR
'Jon brought the wine.' (Hualde & Ortiz de Urbina (2003, 364))

22. Active Argument Encoding 4

(20) *Active ergative agreement-marking in Guaraní (Tupí-Guaraní)*:

a. Še-manuˀa
1.SG.ABS-remember
'I remember.'

b. A-ma.apo
1.SG.ERG-work
'I work.'

c. Ø-Ai-pete
3.SG.ABS-1.SG.ERG-hit
'I hit him.' (Gregores & Suárez (1967))

23. Anti-Active Patterns

Note:
The present analysis does not per se exclude an 'anti-active' pattern, as in (21). Anti-active marking would arise in an accusative system that preserves the CASE feature specification matching the argument type in markedness in intransitive contexts (rather than the CASE feature specification that is unmarked); it differs from the accusative pattern in (1-a) in encoding DP_{ext} of V_i by accusative. This type of encoding pattern does not seem to occur (see, e.g., Sigurðsson (2004)).

(21)
$$\begin{array}{cc} \multicolumn{2}{c}{\textit{Anti-active marking}} \\ \boxed{DP_{ext}\text{-}V_i} & \boxed{DP_{int}\text{-}V_i} \\ \boxed{DP_{ext}\text{-}V_t} & \boxed{DP_{int}\text{-}V_t} \\ \text{nom} & \text{acc} \end{array}$$

Possible Solution: Such a system is dysfunctional (Bechert (1979), and Lecture 1).

24. An Alternative

There is an alternative solution to the *Agree/Merge indeterminacy* problem on the vP level; one that does not involve constraint violability and constraint ranking (Lennart Bierkandt, p.c.).

Assumption:

- Subcategorization features that trigger Merge ([•F•]) and probe features that trigger Agree ([*F*]) are *ordered* on v.
- Only the highest feature on the feature hierarchy is visible for the Agree Condition and the Merge Condition at any given stage of the derivation.
- A probe or subcategorization features disappears (or becomes inert) after having triggered an operation (Merge or Agree).

(22) *Ergative/accusative parameter*:
  a. [*CASE:INT*] > [•D•] on v: accusative encoding pattern
  b. [•D•] > [*CASE:INT*] on v: ergative encoding pattern

25. Independent Evidence

A simple theory of *linking* (argument structure ⇝ argument realization):

(23) John_1 gave a book_2 to Mary_3

(24) *Hierarchy of subcategorization features on V* (follows directly from the Bierwisch/Heim/Kratzer/Wunderlich system in terms of λ prefixation laid out in lecture 1):

AGENT > THEME > GOAL
[•D•] > [•D•] > [•P•]

26. Syntactic Ergativity 1

So far, a notion like *"subject"* has been irrelevant. However, there are operations that may have to refer to such a concept, like reflexivization, raising, control, relativization or topic-chaining (pivot-chaining; Dixon (1994)).

Accusative pattern:
In accusative systems, it is often the nominative DP that has subject properties. Typically, the nominative DP is also the highest (or single) argument DP. If the highest argument is a non-nominative DP, as with oblique dative-nominative orders in Icelandic, the oblique DP can have subject properites (see lecture 1).

Ergative pattern:
In ergative systems, there are two possibilites: Either the highest argument DP, or the argument DP that is marked with absolutive case, can exhibit subject properties: *morphological ergativity* (except for CASE marking, the syntax treats $DP_{ext/int}$-V_i and DP_{ext}-V_t on a par) vs. *syntactic ergativity* (as with CASE marking, the syntax treats $DP_{ext/int}$-V_i and DP_{int}-V_t on a par. as in *Mother saw father and – returned*, where – is *he*, not *she*). The former option is chosen in Archi, Basque, Warlpiri; the latter in Dyirbal (at least as a tendency). Optionality is possible as well (Chukchi). Finally, in a single language, some operations may select the highest argument as the subject, and other operations may select the absolutive argument (Inuit). See Comrie (1989), Bobaljik (1993), Dixon (1994), Bittner & Hale (1996a,b).

27. Syntactic Ergativity 2

Two possible analyses:
(i) In syntactically ergative systems, NP_{int} moves to SpecT (which which it Agrees) and becomes the highest argument (cf. Bittner & Hale (1996b)).
(ii) Subject-oriented operations affect prominent arguments. There are two ways for an argument DP to become prominent:

(25) *Prominence*:
An argument DP counts as prominent if it
a. occupies the highest argument position in the clause;
b. undergoes Agree with the highest functional head.

Consequence:
The two notions of prominence typically converge on a single argument in accusative systems; the situation is different in ergative systems.

28. Further Issues: Split Ergativity, Three-Way Systems

Cases of split ergativity

- tense-/aspect-based split ergativitiy, as in Burushaski, Hindi (see Mahajan (1990))
- clause-type based split ergativity, as in Sierra Popoluca (see Elson (1960b)).
- person-based split ergativity, as in Dyirbal (see Dixon (1994))

Co-occurrences of ergative and accusative
(see Dixon (1994), Woolford (1997), Kiparsky (1999), and lectures 1 and 3)

29. Person-Based Splits

Person-based split ergativity in Dyirbal:
In Dyirbal, DP_{ext} of V_t is marked ergative if it is a 3rd person pronoun or an item to the right of it on the person/animacy scale in (26). DP_{int} of V_t is marked accusative if it is a

1st or 2nd person pronoun. All other types of argument DP are not encoded by an overt marker (see Dixon (1994)).

(26) *Person/animacy scale* (Silverstein (1976), Aissen (1999)):
1st person pronoun > 2nd person pronoun > 3rd person pronoun > proper name > common noun, human > common noun, animate > commoun noun, inanimate

Strategies for analysis: A person-based split may in principle be either a syntactic or a morphological phenomenon. Such splits often seem to be functionally motivated in the sense that only unexpected, atypical configurations are marked.
(a) Morphology: There is a zero allomorph that results from impoverishment (an operation from Distributed Morphology that delets morphosyntactic features post-syntactically). (Impoverishment rules might ultimately be motivated by functional considerations).
(b) Syntax: Instantiation of argument encoding features in the numeration is restricted by the argument type (its place on the person/animacy scale).

30. Tense/Aspect-Based Splits

Recall that there are two versions of the present analysis:

- *constraint ranking* (Merge Condition ≫ Agree Condition, or vice versa)
- *feature hierarchy* ([•D•] > [*CASE:INT*], or vice versa)

Here the feature hierarchy version might prove superior:
Sketch of an analysis:

1. The Hindi lexicon has to v's:
   v_1 with the feature hierarchy [•D•] > [*CASE:INT*]
   v_2 with the feature hierachy [*CASE:INT*] > [•D•].
2. T[+PERF] selects v_1, T[−PERF] selects v_2.
3. Morphological realization need not be identical.

Note:
A similar analysis can be developed for *clause-type* based splits, as in Sierra Popocluca.

31. Three-Way Systems

(27) *Antekerrepenhe*:

a. Arengke-le aye-nhe ke-ke
   dog-ERG me-ACC bite-PST
   'The dog bit me.'

b. Apwerte-le athe arengke-nhe we-ke
   stones-INS I-ERG dog-ACC pelt-PST
   'I pelted the dog with stones.'

c. Arengke nterre-ke
   dog-NOM run-PST
   'The dog ran.'

Analyses:

- morphological realization; or
- v has two case features (or there are two v's)

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