0 Case Marking Typology

Beatrice Primus

0.1 Means of expression and general functions of cases

In its core sense and with reference to its basic general function, case is a category of marking dependent noun phrases for the type of relationship they bear to their heads (cf. Blake 2001: 1, Butt 2006: 4). As the Latin examples in (1a, b, c) show, at the phrasal level, cases may be used on the dependent of an adpositional, nominal, or adjectival head:

(1) Latin
   a  ad urb-em
      at  town-SG.ACC
      ‘at town’
   b  victoria Roman-orum
      victory Romans-PL.GEN
      ‘the victory of the Romans’
   c  avidus glori-ae
      thirsty glory-SG.GEN
      ‘thirsty for glory’

At the clausal level, the inflected verb is the head. Its dependents are classified into valency-bound arguments and valency-free adjuncts (or modifiers) and further sub-classified
according to their semantic roles, such as agent, patient, or locative. All these types of dependents may be indicated by case, as in the examples (2a, b) from Basque (Saltarelli 1988: 64-5):

(2) Basque

a aita lan-era joa-n d-a
father[ABS] work-ALL go-PRF 3ABS-PRS

‘Father has gone to work.’

b aita-k ama-ri gona gorri-a eros-i d-io

‘Father bought a red skirt for mother.’

(2a) shows the subject of an intransitive verb (S) in the absolutive case and a directional modifier in the allative. With the ditransitive verb in (2b), the absolutive appears on the patient noun phrase (P), while the agent (A) is coded by the ergative. In addition, a benefactive argument appears in the dative.

The case pattern shown in (2a, b), with S and P coded by the same case (the absolutive) and differently from A, is called ergative. The English translations of (2a, b) show the accusative pattern: S and A are coded alike by the nominative, while P appears in the accusative (cf. section 0.3 below).

In traditional grammars oriented on Classical Greek and Latin, the notion of case refers to inflectional affixes only. In current typological research, however, independent function words, such as adpositions or — more rarely — relator nouns (cf. Blake 2001: 15-17), as well as phonological means, such as tone, are also treated as case expressions.
(compare Dryer 2005 for an areal overview). Example (3a) shows postpositions, which are the equivalents of the dative and the nominative in Japanese (Shibatani 2001: 319); example (3b) illustrates the preposition e for the ergative in Samoan (Mosel 1987: 455):

(3)

Japanese

a Sensei ni eigo ga wakar-u

   teacher  DAT  English  NOM  understand-PRS

   ‘The teacher understands English.’

Samoan

b Sa fasi le tama e le fafine

   PST  hit  DET  boy  ERG  DET  woman

   ‘The woman hit the boy.’

The distinction between inflectional and independent expressions of morphological categories including case is of typological relevance: inflection establishes the synthetic type; independent forms yield the analytic type (see Brown’s chapter, this volume).

The case expressions discussed so far are associated with dependents and establish dependent-marking (cf. Nichols 1986, 1992). If the expressions for semantic roles are attached to the head, they are classified as head-marking. Head-marking is included in the broadest notion of case. Compare the examples (4a, b, c) from Abkhaz (Hewitt 1979: 51, 103, 116):

(4) Abkhaz
These examples show prefixes attached to a verbal, postpositional, and nominal head in the absence of case expressions on the dependent noun. The verbal prefixes in (4a) distinguish the agent, recipient, benefactive, and patient (the latter by zero-realization).

The general function of cases that has been focused on so far is to code the relationship of government between head and dependent. But cases also participate in the relation of concord (or agreement) whenever exponents of the same case category occur on more than one element of the phrase. The distinction between government and concord is particularly relevant for a specific type of compound case marking that is called Suffixaufnahme (cf. Plank 1995, Moravcsik 1995). The typical pattern of Suffixaufnahme, which despite its name is not restricted to suffixes, is an attribute noun that carries two distinct cases: one case assigned via government in order to express the attributive dependent function; the other case matching the case of the head noun via concord. Example (5) from Gumbaynggir (Australian) shows the dependent noun junuy bearing the ergative, which
matches the case of the head noun \textit{ba:ba}, and the genitive, which expresses its attributive function (Morvacsik 1995: 452):

(5) Gumbaynggir

\begin{verbatim}
    ba:ba-gu       junuy-gundi-yu
\end{verbatim}

\text{father-ERG \hspace{1em} child-GEN-ERG}

‘the child’s father’

Compound case marking in a more general sense is found in various languages; compare English \textit{from under the table} and Tabasaran \textit{ul-i-n} \text{eye-ERG-GEN} ‘of the eye’, where the expression for the genitive is attached not to the stem but to the ergative form (cf. Blake 2001: 102-8). By decomposing the compound case expressions of Tabasaran and Tsez, which gained a reputation for having around 50 cases, Comrie and Polinsky (1998) have managed to reduce their number to fourteen or fifteen (depending on dialect) for Tabasaran and eighteen in Tsez.

In the phenomena discussed so far, cases express a relation between syntactically connected elements. But virtually any case may also occur on isolated or dislocated phrases; for example, the \textit{ablativus absolutus} in Latin or the vocative, which is a specific case for detached nouns referring to the addressee, for instance, in Classical Greek, Latin, and Rumanian. Thus, in Rumanian, the vocative noun \textit{Mario} in \textit{Mario, unde mergi?} ‘Mary, where are you going?’ cannot be replaced by the nominative or citation form \textit{Maria}.

As to the syntactic categories that receive case, the noun is the typical case bearing category, and accordingly, many traditional grammars use case as a defining criterion for nouns. But cases are sometimes also found on other nominal categories since they may be
transferred from nouns to demonstratives or adjectives via concord. Verbs and adpositions regularly assign case but do not receive it (cf. Blake 2001: 60). However, if one subsumes head-marking under case, verbs and adpositions may be considered to bear case as well, as shown by the Abkhaz examples in (4a, b) above.

In some languages, case appears on any element that comes first or last within the noun phrase, no matter whether it is a noun, an adjective, or a demonstrative (cf. Blake 2001: 99-101). See the examples from Rumanian in (6) and Basque (Saltarelli 1988: 75-7) in (7), which pose a serious problem for the distinction between head and dependent and for the traditional case-based definition of the category noun.

(6) Rumanian
a  copil-ul-lui mic
child-DET-OBL little
‘the little child’
b  mic-ul-ui copil
little-DET-OBL child
‘the little child’
c  acest-ui copil mic
this-OBL child little
‘this little child’

(7) Basque
a  amerikar hiri-a
American city-SG.ABS
The case distribution shown in (6) and (7) is also intriguing for word order typology. If analyzed as dependents, the position of the case-marked elements that are not nouns — see (6b, c) and (7b, c) — departs from the basic word order type of the language. Rumanian is basically a head-initial language, but the examples (6b, c) display an adjective-noun and a demonstrative-noun order and not the expected reverse order. In Basque, a basically head-final language, the mirror order adjective-noun and demonstrative-noun is expected but not used if the adjective or demonstrative bears the case expression, as shown in (7b, c).

However, the position of all case-marked elements in (6) and (7) is consistent with the word order type of these languages if they are analyzed as heads (cf. Radford 1993: 90). Space limitation does not allow for a discussion of the typological correlations between case marking and basic word order. The reader interested in this topic is invited to consult Siewierska (1998), Hawkins (2002), Dryer (2002), and Song (2001: 202-7).

0.2 Case Hierarchy and hierarchy-based constraints

The elements of grammatical categories and relations are not equipollent, in general. This also holds for cases, which are organized in a hierarchy that is directly reflected by
asymmetries in their form, selection, and grammatical behaviour (see Corbett’s chapter, this volume). Most hierarchy-based generalizations in the typological literature rely on the hierarchy of grammatical relations: subject > direct object > indirect object > other oblique function (GRH hereafter). However, generalizations based on grammatical relations do not automatically hold for case functions since grammatical relations have different manifestations that are often inconsistent with each other (compare Primus 1999, Croft 2001 for approaches that eliminate them). Therefore, in this section, we will focus on three phenomena that are clearly determined by case functions in many (but not necessarily all) languages: phonological realization, selection, and agreement.

The Case Hierarchy (CH hereafter) in (8) is accepted more or less explicitly by many typologists (cf. Dixon 1994: 57, Blake 2001: 89-90, Croft 2001: 139-41):

(8) nominative/absolutive > accusative/ergative > dative > other oblique cases

The alternative terms nominative/absolutive and accusative/ergative are based on the different semantic roles these cases typically encode (cf. section 3 below).

The alternative terms already suggest that there is no universal CH. Another source of variation is the fact that a language may lack one of the categories involved. Thus, for example, Finnish and other Finno-Ugric languages with the exception of Hungarian do not have a dative. Furthermore, the CH in (8) only holds for cases that are assigned at the clausal level. Nouns, for instance, are more likely to assign cases lower on the hierarchy. This means that for noun governors, the genitive or another lower case is at the top of the selection hierarchy which is why some linguists rank the genitive above the dative in a more global CH (cf. Blake 2001: 89-90). Even if each language has its own CH and each phenomenon its own
starting point on the CH, hierarchy-based constraints are applicable cross-linguistically if they are reformulated — as in this section — in abstract hierarchical terms, such as A > B, first, second, and third case, or higher vs. lower case (with the highest rank coming first on the left). The value of these variables may vary from language to language.

We start our discussion of case-based phenomena with asymmetries in the phonological realization of cases that are captured by the following violable (or statistical) constraints (cf., e.g., Greenberg 1963, Universal 38; Croft 2001: 139-41):

(9) For any cases A > B on the CH,
   a  if B has a zero-realization, A’s realization is also zero;
   b  B’s realization is not zero (the lower B is, the stronger the restriction).

The constraints (9a, b) explain a commonly attested constellation in which the first case, the nominative or absolutive, is expressed by the bare nominal stem while all lower cases have an overt expression. They prohibit overt realization of the first case and zero-realization of a lower case. This exceptional situation is very rarely found; for instance, in Oromo (Cushitic), Mohave (Yuman), Turkana (Eastern Nilotic), and Nias, an Austronesian ergative language. Evidence for the realization asymmetry between the dative and the accusative is provided by Siewierska (1998) for 124 European languages. In her data base, languages that have zero-realization of datives also have zero-realization of ergatives or accusatives and zero-realization of absolutes or nominatives.

The CH of a language can also be justified by the selection asymmetries in (10a, b):

(10) For any cases of clausal core arguments ranked as A > B on the CH,
a if B is selected, A is also selected;

b B is not selected (the lower B is, the stronger the restriction).

The generalizations (10a, b) are implicitly acknowledged by many typologists, at least with respect to the first and second case, and are explicitly formulated in optimality-theoretic terms by Woolford (2001), among others. The implicational constraint (10a) tolerates a lower case if it co-occurs with a higher case, while the absolute constraint (10b) prohibits a lower case altogether.

Taking the dative (the third case) as an example, these constraints yield a three-way typological distinction, depending on which one is violable and which one is inviolable (cf. Woolford 2001). In the first type of languages, the absolute constraint is inviolable: the dative and every lower inflectional case is not selected for clausal arguments, as in English. The inviolability of the absolute constraint unilaterally implies the inviolability of the implicational constraint. This leads to the absence of languages in which the former is inviolable and the latter violable.

Japanese is a representative of the second type: it violates the absolute constraint since it has a dative (cf. the example (3a) above) but never violates the implicational constraint, according to which the dative is never used if the nominative is not selected. This means that the dative is barred with monovalent predicates.

The third type is found in German: both constraints are violated since the dative is used with mono-, bi-, and trivalent verbs. Nevertheless, the constraints manifest themselves in selection frequency, as demonstrated by the following ratios that are extracted from the valency dictionary of Mater (1971). NOM+ACC+DAT is the almost exclusively used case pattern for trivalent verbs (close to 100%) as opposed to NOM+DAT+GEN and
NOM+ACC+GEN, which are only selected by a few lexemes (below 1%). All tri- and bivalent verbs select a nominative, very few of them optionally. As to the second case selected by bivalent verbs, the ratios decline dramatically along the CH: 92.7% of the verbs select the accusative; 7%, the dative; and 0.3%, the genitive. With monovalent verbs, the selection of the dative (or any other oblique case) instead of the nominative is extremely rare (below 1%).

As to the scope of these formal case selection constraints, the question arises whether they also hold for non-basic constructions, such as passives and causatives, or whether they are sensitive to these valency-changing operations (see Kulikov’s chapter, this volume). We will argue that the case constraints do not have to be reformulated for non-basic constructions. This means that derived subjects and objects are usually case marked as are subjects and objects of basic clauses (compare Keenan and Dryer 2005: 2-3 for passives).

In passive, the agent argument is demoted to an optional oblique adjunct while one of the other arguments, preferably the patient, is promoted to the nominative or absolutive. Thus, for example, Peter ate the cake becomes The cake was eaten by Peter or simply The cake was eaten. Promotion to the first case guarantees that passive clauses obey the nominative requirement imposed by the selection constraints (10a, b). However, as to be seen in the examples (11a, b) from Ute (Uto-Aztecan), there are also non-promotional passives, in which the case of the patient is not promoted to the nominative (Givón 1982: 148):

(11) Ute

a Ta'wá-ci 'u siváatu-ci 'uwaáy pâxá-qa

man-NOM the(NOM) goat-ACC the(ACC) kill-ANT

‘The man killed the goat.’
b siváatu-ci 'uwaáy pgá-ta-ţa

goat-ACC the(ACC) kill-PASS-ANT
‘The goat was killed.’

The effect of the nominative requirement is demonstrated by the extraordinary status of non-promotional passives, since languages having only this type of passive, such as Ute, are extremely rare. In general, languages have promotional passives only (e.g., English and French) or both promotional and non-promotional passives (e.g., North Russian dialects, Dutch, Latin, Classical Greek, Shona (Bantu), and Turkish, cf. Siewierska 1984: 39 ff., Keenan and Dryer 2005: 17 ff.).

The case selection constraints formulated above also hold for causative constructions. In causative formation, a causer argument is added to the argument structure of the basic predicate, as shown by the Turkish examples in (12)-(13):

(12) Turkish
a Hasan öl-dü
   Hasan[NOM] die-PST
   ‘Hasan died.’

b Ali Hasan-ı öl-dür-dü
   Ali[NOM] Hasan-ACC die-CAUS-PST
   ‘Ali killed Hasan.’

(13) Turkish
a müdür mektub-u imzala-dî
director[NOM] letter-ACC sign-PST
‘The director signed the letter.’

b Ali mektub-u müdür-e imzala-t-tı
‘Ali made the director sign the letter.’

The new causer receives the nominative, while the case of the causee, which is the subject of the basic predicate, is demoted to a lower case according to a constraint formulated by Comrie (1976): Demotion goes down the GRH to the highest free position. This means that if the basic verb has only a nominative argument (cf. (12a)), the causee appears as a direct object in the accusative (cf. (12b)); if the basic verb selects a nominative and an accusative argument (cf. (13a)), the causee appears as an indirect object in the dative (cf. (13b)), and so forth down to lower positions on the GRH. This type of demotion can be explained on the basis of the implicational case constraint (10a) in its strictest interpretation: Demotion to the next free position on the CH guarantees that all higher cases must also be realized.

As well documented in the typological literature, the demotion pattern of Turkish is not the only attested option for causatives (cf. Song 1996). But other recurrent properties of causatives may also be explained by general argument selection constraints that are not sensitive to valency-changing operations (cf. Song 1996).

Let us finish our overview of case-based grammatical phenomena with a discussion of predicate-argument agreement. The CH also serves as a basis for the following violable (or statistical) constraints on agreement, which were originally formulated in terms of the GRH (cf. Moravcsik 1978, Lehmann 1988):
(14) For any clausal core arguments whose cases are ranked as A > B on the CH,

a if the clausal predicate agrees with B-arguments, it also agrees with A-arguments;

b the clausal predicate does not agree with B-arguments (the lower B is, the stronger 
the restriction).

Note that we consider only case-based agreement in which each case function has its specific 
agreement marker (cf. Primus 1999, chap. 6; Croft 2001, chap. 4).

The constraints (14a, b) allow for a typological variation that can be summarized as 
follows: In the first type of languages, agreement is restricted to arguments bearing the first 
case. This is the nominative in nominative languages, such as German or Russian, and the 
absolutive in ergative languages, such as Avar, Kurdish, and Kuikuro (Cariban). This type of 
agreement is illustrated by the Avar example (15), in which agreement is confined to the 
absolutive argument of class 2 (c2), cf. Charachidzé (1981: 144):

(15) Avar

y-osana yas di-cca

c2-took girl(NOM,c2) I-ERG

‘I took the girl.’

The second constellation is agreement with two arguments in the first and second case. These 
case functions are the nominative and accusative in languages such as Hungarian and 
Mordvin (Finno-Ugric). In ergative languages, such as West Greenlandic (Eskimo) and 
K'iche' (Mayan), this type of agreement involves the absolutive and ergative argument.

In the third type, the predicate agrees with (at least) three case arguments. This type of
agreement characterizes the nominative languages Swahili, Kinyarwanda (both Bantu),
Maltese, and Arabic. Ergative languages of this type are Abkhaz, Abaza, and Basque. Basque
and Abkhaz were illustrated in (2a, b) and (4a) above. Abkhaz and Abaza are exclusively
head-marking languages with no overt case distinctions on arguments. The functional
similarity between head-marking and agreement is that they are excluded for modifiers,
whereas dependent-marking may include modifiers.

Languages in which agreement is confined to accusative arguments of transitive verbs
— such as Barai (Papua New Guinea), Roviana (New Georgia, Solomon Islands), and
Gilbertese (Micronesia) — provide counterexamples to the implicational constraint (14a). A
plausible alternative analysis is offered for the Micronesian languages by Harrison (1978),
who assumes that this pattern encodes the transitivitv of the predicate.

We conclude this section with a brief overview of influential approaches that offer an
explanation for the CH and the constraints discussed above (cf. Malchukov and Spencer (to
appear). Jakobson’s work (1936) has paved the way for markedness approaches in
morphology. He explains the CH nominative > accusative > dative by semantic
considerations: the more marked case is lower on the CH and has a semantic value that is not
indicated by the less marked higher case. A further elaboration of Jakobson’s assumptions is
Mayerthaler’s (1981: 25) principle of constructional iconism that ties functional to formal
markedness as follows: an element that is semantically more marked by a semantic
specification lacking in the unmarked element is also formally more marked. According to
Mayerthaler, this principle explains the realization asymmetry between the nominative and
oblique cases (cf. (9) above).

Optimality Theory (OT) is the most recent markedness-based approach. The basic
assumption of OT is that constraints are ranked in a hierarchy which determines whether a
constraint is inviolable — that is, undominated — or violable — that is, dominated by an antagonist constraint. In this way, violability is regulated by constraint interaction. Woolford (2001) captures the selection constraint formulated informally in (10b) above by a fixed ranking of violable constraints: *DAT >> *ACC >> *NOM. This ranking will prohibit the selection of the dative first, unless *DAT is dominated by a constraint that requires the dative, and so forth with every lower constraint.

The merits of OT are the rehabilitation of violable rules (constraints) in theoretical linguistics and the explanation of typological variation by constraint ranking. One weakness of OT is the lack of functional — that is, metagrammatical — explanations for constraint rankings (cf. Haspelmath 1999). Thus, Woolford (2001) treats the CH as an epiphenomenon of the fixed ranking *DAT >> *ACC >> *NOM, neglecting the fact that the CH is obviously the more basic metagrammatical assumption, which explains the fixed ranking of several families of case constraints, including phonological realization, selection, and agreement. Another problem is the fact that ranked constraints only allow for one pattern to win the competition, all losers being equally ungrammatical. Finer-grained statistical asymmetries that were documented above for the case patterns of German cannot be captured. These weaknesses hold for standard OT, which is closer to the generative approach of Noam Chomsky, but there are alternative OT accounts that accommodate frequency asymmetries (cf. Bresnan and Nikitina 2003) and functional explanations (cf. Bresnan and Aissen 2002).

Another line of explanation is grammaticalization (cf. Lehmann 1988, 1998). The basic assumption of this type of approach is that case functions are aligned on a scale of grammaticalization (GS hereafter) that is equivalent to the CH given above in (8) for core argument functions: the first case function — the absolutive or nominative — is the most grammarized one, while less grammarized, semantic cases are lower on the CH. From
Lehmann’s six parameters of grammaticalization, we select phonological attrition and condensation as pertinent to our discussion. Attrition explains the phonological realization asymmetry discussed above by the general claim that more grammaticized elements — for example, cases in higher positions on the CH — have a simpler phonological form than less grammaticized elements — for example, lower ranking cases. Condensation means that more grammaticized elements — for example, the nominative or absolutive function — have fewer selection restrictions than less grammaticized elements, which explains the selection asymmetries discussed above. The agreement asymmetries discussed above are also explained on the basis of the GS (Lehmann 1988: 64).

In sum, markedness and grammaticalization approaches share a number of common assumptions and are able to explain case-based asymmetries by generalizations that are much wider in scope. However, some approaches make the questionable assumption that higher — that is, grammaticized or unmarked — cases are intrinsically underspecified for semantic oppositions. This assumption is falsified by strong semantic constraints for the first two cases of the CH (cf. (17) below). The situation is better captured in OT by constraint ranking: Semantic underspecification of higher cases arises only when the formal case selection constraints dominate the functional ones (cf. section 0.3 below).

The wide-spread structuralist assumption is that language structure is based on an idealized abstract system (langue or linguistic competence) while language use (or performance) is secondary. The last decades witnessed the rise of several influential performance-based approaches in linguistics defending the opposed assumption that grammars have conventionalized syntactic expressions and structures in proportion to their degree of preference in performance. Instead of an abstract notion of markedness, some usage-based approaches take frequency as the basic explanans (cf. Bybee and Hopper 2001,
The asymmetries in the overt realization of cases are explained by the generalization that more frequent words tend to be shorter than infrequent ones. Selection asymmetries are captured by the general observation that unmarked members are more frequent than marked members. As to the frequency asymmetries themselves, they are assumed to follow from more general considerations. Thus, for Croft (2001: 142), frequency asymmetries in the usage of cases result from the fact that all verbs require a nominative (or absolutive) argument, but only transitive verbs also have an accusative (or ergative). On closer inspection, this consideration follows from the case selection constraints formulated in (10a, b) above, suggesting that frequency asymmetries are explained by case selection constraints and the CH and not the other way around. This means that frequency by itself does not suffice unless it is supplemented with general principles of performance.

Such principles have been formulated by Hawkins (2002, 2004, see also Hawkins’s chapter, this volume). They can be reduced to the slogan: Express the most with the least and express it earliest (Hawkins 2004: 25). Hawkins introduces a relational efficiency concept that is more complex than the concept of economy. Efficiency increases with the maximization of the ratio between the amount of retrieved information and the complexity of linguistic expressions that have to be processed in order to access that information. In simpler terms, this means: the more you express and the less complex the forms that encode what you express the better. This kind of explanation can be demonstrated for the CH and CH-based constraints by two scenarios. In scenario X, cases show consistent asymmetries. In scenario Y, all cases have equally complex forms, and any case and combination of cases may be selected and targeted by case-based rules. Performance is more efficient in situation X, particularly because it enables a coalition of favourable conditions: the case with the simplest form is obligatorily selected, occurs first in linear order, and is the first target in case-based
rules. This coalition of factors leads to an optimal efficiency in performance since a maximum of information is retrieved from a minimum of processed form and structure. The rationale of the CH is to guarantee a coalition of conditions that enhances efficiency in performance.

0.3 Semantic functions of cases

The first section of this article offered an overview of the general functions of cases in which it was established that their main role is to express head-dependent relationships. The most complex relational network arises at the clausal level, where predicates may select a varying number and different types of dependents. As a consequence, relational typology is mainly concerned with the different ways the core arguments of the predicate are case-marked for their semantic function (cf. Bickel’s chapter, this volume).

Approaches treating semantic functions as cluster concepts manage to cope with typological variation without losing track of cross-linguistic generalizations. Closely related influential approaches of this kind are Role-and-Reference-Grammar (cf. Van Valin and LaPolla 1997), the transitivity concept of Hopper and Thompson (1980), and Dowty’s (1991) Proto-Role approach. These approaches share three basic assumptions. First, category membership is a matter of degree, since one element may accumulate a higher number of properties than another element falling within the same concept. This means that one argument may be more agentive than another. Second, category membership is not necessarily disjoint, and accordingly, an argument may have semantic features that are distributed over two concepts. Third, semantic decomposition helps to reduce the inventory of superordinate concepts dramatically without neglecting finer-grained distinctions. Dowty’s account, which needs only Proto-Agent and Proto-Patient as superordinate concepts, will be
taken as a theoretical basis for the following discussion.

Dowty (1991: 572) defines Proto-Agent and Proto-Patient by properties that are uncontroversial in the linguistic community. The following properties characterize the Proto-Agent role: the participant does a volitional act and intends this to be the kind of act named by the predicate (volition); it is sentient of or perceives another participant or its own state or action (sentience); it causes an event or change of state in another participant (causation); it is physically active or moving (movement); it exists independently of the event named by the predicate (independence).

The list of properties for the Proto-Patient role is the following: the participant undergoes a change of state, is causally affected, is stationary relative to another participant, and does not exist independently of the event or does not exist at all. Finally, the participant is incrementally affected in such a way that the completion of a telic action entails that it is totally affected. Thus, for example, the wagon is incrementally and totally affected in load the wagon with hay, but not in load hay onto the wagon.

The above lists of properties are preliminary for Dowty: properties can be added or deleted without changing the logic of the functional principle which links grammatical relations to semantic roles. This principle is stated by Dowty as follows (1991: 576): The argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object.

We will illustrate Dowty’s assumption that cases are sensitive to the number of consistent Proto-Role properties an argument accumulates by referring to a typological pattern in which the argument of one class of intransitive verbs is coded like the agent of transitive verbs (A) and the argument of another class of intransitive verbs is coded like the
patient of transitive verbs (P). This pattern is called active or split intransitive. It is illustrated in (16) by examples from Guarani (Gregores and Suárez 1967: 110, 131):

(16) Guarani
a  a-ma.apo
   1SG.A-work
   ‘I work.’
b  še-manuʔa
   1SG.P-remember
   ‘I remember.’
c  ai-pete
   1SG.A-hit
   ‘I hit him.’
d  še-pete
   1SG.P-hit
   ‘He hits me.’

Verbs that select only one core argument use different head-markers for this argument. The verbal A-prefix in (16a) is an allomorph of the head-marker used for the 1st person agent of the transitive verb in (16c). The P-prefix in (16b) is the same as for the 1st person patient of the transitive verb in (16d). The semantic analysis of the distribution of A- and P-prefixes (cf. Primus 1999: 97-100) is summarized in Table 0.1:

[Insert Table 0.1 here]
Table 0.1 shows that split intransitivity may be more sensitive to the number of Proto-Agent properties an argument accumulates than to the distinction between Proto-Agent and Proto-Patient. Arguments with the lowest number of Proto-Agent properties, which are selected by verbs of class i) such as porã ‘be beautiful, right’ and marete ‘be powerful, strong’, are head-marked like the patients of transitive verbs; that is, by a P-prefix. The semantic parallelism between class i) arguments and patients is not patienthood but the lack of agentive properties. Arguments with the highest number of Proto-Agent properties, which are selected by verbs of class iv) such as gwata ‘walk’ and koroi ‘scold’, are marked like the agents of transitive verbs; that is, by an A-prefix. Arguments with an intermediate status show a greater variation. The sentience verbs of class ii) such as akãraku ‘be enthusiastic, exalted’ and asi ‘be sick, feel pain’ slightly prefer a P-prefix, while class iii) does not show any preference for one of the two prefixes at all: kerai ‘talk in one’s sleep’ and kurusu ‘shrink’, for example, select a P-prefix, but ahoga ‘drown’ and gwe ‘disappear, go out’ opt for an A-prefix. Table 0.1 also shows that split intransitivity is a lexical phenomenon, as there are exceptional lexemes even in the most regular classes i) and iv).

Semantic accounts of split intransitivity in other languages, which are in many respects compatible with the analysis proposed above for Guarani, are offered, among others, by Van Valin (1990), Dowty (1991), Mithun (1991), and Primus (1999, chap. 4).

A typological distinction that is independent of and may co-occur with split intransitivity is that between ergative and accusative constructions (cf., e.g., Plank 1979, Dixon 1994, Manning 1996, Kibrik 1997). Since it is not accounted for by Dowty’s argument linking principle given above, we offer the following revised version in terms of case in its broadest sense (cf. also Primus 1999: 61):
(17) The greater the number of Proto-Agent properties an argument accumulates, the more likely it is coded by

a  the first case (accusative construction), or alternatively by
b  the second case (ergative construction).

The greater the number of Proto-Patient properties an argument accumulates, the more likely it is coded by

a’ the second case (accusative construction), or alternatively by
b’ the first case (ergative construction).

The alternatives (17a, a’) vs. (17b, b’) capture the typological accusative-ergative distinction. The ergative pattern was illustrated above by the examples from Basque in (2a, b), Samoan in (3b), Abkhaz in (4a), and Avar in (15). The accusative construction was illustrated by their English translations and by the Turkish examples in (12)-(13) above.

As shown in the Basque examples, the first case (the absolutive), which is reserved for the patient of (di)transitive clauses, is also used for the sole argument of intransitive clauses. However, the generalization of the absolutive (or the nominative) in intransitive clauses does not hold for languages with split intransitivity. This can be accounted for by constraint interaction: Ergative and accusative constructions may co-occur with split intransitivity if the role-semantic constraints are undominated, in which event cases are selected according to their Proto-Role properties in both transitive and intransitive clauses, as shown for Guarani above. If the formal constraints requiring the first case dominate the role-semantic constraints, split intransitivity is blocked, and every clause has an argument in the first case.

Besides the typological distinctions between ergative, accusative, and split-intransitive
case patterns, there is a lot more typological variation due to role-semantic specifications. Only Proto-Agents with a high number of agentive properties and Proto-Patients with a high number of patient-like properties are more consistently coded within the limits imposed by the ergative-accusative distinction. Arguments with a smaller number of consistent role properties are less restricted with respect to the case they bear, which leads to considerable cross-linguistic and language-internal variation with respect to their case coding. These generally acknowledged observations are accounted for by the role-semantic case constraints in (17) above. Experiencers of cognition or sentience verbs are arguments with a smaller number of consistent Proto-Agent properties and may be coded canonically like agents proper or non-canonically as in the Japanese example (3a) above and in the following example from Imbambura Quechua (Cole 1982: 108) Juzita (ACC) rupan ‘José feels hot’ (cf. Verma and Mohanan 1991, Aikhenvald et al. 2001, Bhaskararao and Subbarao 2004).

Recipients of verbs of giving also have a small number of consistent role properties which explains their cross-linguistic and language-internal coding variation. Three patterns, which can be reduced to two constructions, are more commonly attested (cf. Dryer 1986, Croft 2001, Haspelmath 2005). These patterns occur in English, as shown in (18a, b, c):

(18)  

a Mary gave the apple to the child. \[R \neq A, P\]

b Mary gave the child the apple. \[R = P \text{ or } R = P_{tr} \neq P_{ditr}\]

c Mary supplied the child with apples. \[R = P_{tr} \neq P_{ditr}\]

The first example (18a) illustrates the indirect-object construction: the case of the recipient (R) is different from and lower on the CH than that of the agent (A) and patient (P). This pattern is typologically skewed in favour of dependent-marking, the dative being the typical
case for the recipient, as in Basque, Turkish, and German.

The second example (18b) shows the double-object construction, which is preferred in languages or constructions that have no dependent-markers for R and P, such as English, Swedish, and Kinyarwanda (Bantu).

In the third primary-object pattern (cf. (18c)), the recipient receives the case reserved for the patient of monotransitive verbs ($P_{tr}$), while the patient of the ditransitive verb ($P_{ditr}$) is expressed differently. The double-object pattern is subsumed by Croft (2001: 145) under the primary-object construction on the basis of the behavioural asymmetry between recipient and patient: in many respects, the recipient is treated as the patient of monotransitive verbs. The primary-object pattern is rarely attested as a lexical default if there is an overt case distinction between R and P (compare Primus 2006 for a functional explanation). It is more common in head-marking languages, such as Motuna (Papua New Guinea), or in the absence of case distinctions (cf. (18b) in English).

What is apparently never found as a lexical default is a construction in which the recipient is coded like the agent (R = A), yielding a double-nominative, double-ergative, or simple recipient-nominative pattern. Recipients in the nominative only occur with isolated verbs; for example, *The child got the apple from Mary*.

The patterns that were discussed above are determined by role-semantic properties, but there are also other semantic distinctions that affect case selection. These are often subsumed under a cluster concept of transitivity (cf. Hopper and Thompson 1980, Kittilä’s chapter, this volume) and include, among others, nominal categories — such as person, animacy, and definiteness — clause type (subordinate vs. main clause), polarity (negative vs. affirmative), and verbal time, aspect, or mood. The nominal categories may be aligned on the following hierarchy (NH): 1st person > 2nd person > 3rd person > person name or kin term >
human > animate > inanimate. At least four types of phenomena are determined by such semantic factors: NH-driven marking, including direct and inverse marking; differential object or subject marking; morphological split ergativity; and case syncretism.

The first three phenomena can be illustrated by the situation found in Tupi-Guarani languages. As shown in (16c, d) for Guarani, there is only one head-marking slot for transitive verbs. The choice of the prefix category is jointly determined by semantic roles and the person hierarchy 1st > 2nd > 3rd. The argument with the highest rank on the person hierarchy determines the prefix category according to its Proto-Role. If it is a Proto-Agent, it takes an A-prefix (cf. (16c) above and (19a, b) below); if it is a Proto-Patient, it takes a P-prefix (cf. (16d)). In some respects, this situation is similar to the distinction between direct and indirect marking that is found in a few other head-marking languages, such as Plains Cree (Algonquian). The ‘direct’ markers are only used if the Proto-Agent is higher on the NH or more topical than the Proto-Patient. Otherwise, a different ‘indirect’ marking is used (cf. Givón 1994).

An additional variation is obtained in Guarani with respect to patient marking (cf. Bossong 1985). Guarani has no overt cases on nominals or free pronouns. Postpositions are used for modifiers and for arguments that are not cross-referenced on the verb. However, the postposition pe and, depending on the person category, cross-referencing are used for patient-like arguments if they are definite and animate, yielding a differential patient marking, as shown in (19a, b) (cf. Gregores and Suárez 1967: 136):

(19) Guarani

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>a-heša</th>
<th>ne-roga</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>A-see</td>
<td>2SG</td>
<td>house</td>
</tr>
</tbody>
</table>

26
‘I see your house.’

b a-heša ne-ru pe
1SG.A-see 2SG-father POSTP

‘I see your father.’

This kind of variation is also found in many other languages and is well documented for the Romance and Iranian languages (cf. Lazard 2001, Aissen 2003).

The third type of variation that may be determined by the semantic functions mentioned above is morphological split ergativity (cf. Silverstein 1976, Dixon 1994, chap. 4). For example, many Tupi-Guarani languages, such as Tupinamba and Kamaiura, restrict the split-intransitive pattern to main clauses and the ergative pattern to subordinate clauses. This means that in subordinate clauses the P-prefix, which marks the patient-like argument of transitive verbs, is used for the sole argument of all intransitive verbs (cf. Jensen 1990).

The last type of variation we need to mention in connection with the semantic factors under discussion is case syncretism, which is the neutralization of overt case distinctions in certain categories or subcategories (cf. Iggesen 2005). In many languages, there is a clear asymmetry between pronouns and other nominal categories, such as nouns, adjectives, or determiners. Thus, for instance, English has lost the inflectional case distinctions at the clausal level for nouns, adjectives, and determiners. They have only persisted for personal pronouns (e.g., he vs. him).

0.4 Summary

This article has revealed that from a typological perspective, cases are formally quite disparate elements, a distinction of broader typological relevance existing between
inflectional affixes that characterize the synthetic type and free forms that establish the
analytic type. The locus of the expression for case in its broadest sense varies along the
typological distinction between head- and dependent-marking. At the clausal level, this means
that the semantic function of arguments and modifiers may be expressed on the dependents
themselves or on the verbal head. The primary general function of cases is to express head-
dependent relations, but cases also participate in concord and may also occur on isolated or
dislocated phrases.

The elements of a case system may show consistent realization, selection, and
grammatical asymmetries that are captured by violable (or statistical) hierarchy-based
constraints. Consistent asymmetries motivate the postulation of a Case Hierarchy (CH): A >
B in abstract terms. The constellation that was argued to optimize language performance is
the following: the lower case B is not zero-marked without the higher case A being zero-
marked as well; B is not selected unless A is selected; and B is not a target of grammatical
rules, such as agreement, unless A is also a target. The CH of a language has been argued to
guarantee such coalitions of asymmetries. Alternative explanations resort to markedness or
grammaticalization: cases in higher positions on the CH are less marked and more
grammaticized than cases which are lower on the CH.

The discussion of the semantic function of cases focussed on split-intransitive,
ergative, and accusative patterns, which are well documented and extensively discussed in the
typological literature. These patterns are based on different types of linking semantic roles to
cases for the core arguments of the clause. Split intransitivity and the enhanced variation of
coding for arguments that are not volitional agents or strongly affected patients are best
accounted for by semantic approaches that treat semantic functions as cluster concepts. The
semantic functions of cases are not confined to role-semantics in the narrower sense. Case
selection is also sensitive to a number of further semantic factors that include, among others, person, definiteness, animacy, clause type, tense, aspect, and mood.

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Table 0.1 Guarani: Semantic profile of split intransitivity

<table>
<thead>
<tr>
<th>Proto-Agent properties</th>
<th>total</th>
<th>A-prefix</th>
<th>P-prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) independence</td>
<td>198</td>
<td>22 (11%)</td>
<td>176 (89%)</td>
</tr>
<tr>
<td>ii) independence, sentience</td>
<td>29</td>
<td>6 (21%)</td>
<td>23 (79%)</td>
</tr>
<tr>
<td>iii) independence, movement (sentience)</td>
<td>53</td>
<td>30 (57%)</td>
<td>23 (43%)</td>
</tr>
<tr>
<td>iv) independence, sentience, movement, causation (volition)</td>
<td>92</td>
<td>89 (97%)</td>
<td>3 (3%)</td>
</tr>
</tbody>
</table>