Ergativity, Accusativity, and the Order of Merge and Agree

Gereon Müller, Universität Leipzig[‡]

February 5, 2008

The goal of this paper is to outline the core of a new minimalist analysis of accusative vs. ergative patterns of argument encoding (via case marking or agreement). The central observation is that indeterminacies may arise in the application of the two elementary operations Merge and Agree (see Chomsky (2000; 2001)), given that they both obey an Earliness requirement (see Pesetsky (1989)); and the central claim I would like to put forward is that 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. The analysis can be extended so as to cover various types of splits that have been noted in the literature (among them tense/aspect-based splits and clause type-based splits).

1. Argument Encoding Patterns

There are two basic encoding patterns for external and internal argument DPs (DP_{ext}, DP_{int}) of transitive and intransitive verbs (V_t, V_i) that are not lexically marked. In an accusative pattern, DP_{int} of V_t is encoded by accusative morphology; DP_{ext} of V_t and V_i, and DP_{int} of V_i are encoded by nominative morphology. In contrast, in a (pure) ergative pattern, DP_{ext} of V_t is encoded by ergative morphology; DP_{ext} of V_i, and DP_{int} of V_t and V_i are encoded by absolutive morphology. This is illustrated schematically in (1) (see Plank (1995)).

(1)

a. Accusative marking

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

b. Ergative marking

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

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). I take this issue to be orthogonal to the choice of encoding pattern as

[‡] I would like to thank Josef Bayer, Lennart Bierkandt, Chris Collins, Gisbert Fanselow, Fabian Heck, Riny Huybregts, and Bernd Wiese for helpful comments. I would also like to thank the audiences of the Tools in Linguistic Theory (TiLT) workshop in Budapest, and the 27th GLOW Colloquium in Thessaloniki, both in 2004. An earlier, much shorter version of the present paper has been available under the title "Argument Encoding and the Order of Elementary Operations" since 2004 (www.uni-leipzig.de/∼muellerg/mu56.pdf). The research documented here was supported by a grant to the project *Argument Encoding in Morphology and Syntax*, as part of DFG-Forschergruppe 742 ('Grammar and Processing of Verbal Arguments').

such, and will use the terms 'accusative', 'nominative', 'ergative', and 'absolutive' indiscriminately for case- and agreement-marking throughout this paper, with CASE as a cover term for both.[1] In what follows, I give examples instantiating each of the four language types that result from cross-classifying type (accusative vs. ergative) and and place (case vs. agreement) of argument encoding.

The Icelandic examples in (2) illustrate an accusative case-marking pattern. DP_{int} of V_t is marked by accusative; other primary arguments receive nominative.

(2) a. Sól-Ø=in skín-Ø
sun-SG.NOM=DET.SG.FEM.NOM shine-3.SG
'The sun is shining.' (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.'

c. 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 (2002, 698))

An accusative pattern that relies on agreement-marking can be found in Navajo. An intransitive context is given in (3-a), transitive contexts are shown in (3-bc). Again, DP_{int} of V_t is encoded by one type of morphological marker (accusative), whereas all other primary arguments are encoded by another marker (nominative).[2]

(3) a. (Y)i-sh-cha
Ø-1.SG.NOM-cry
'I am crying.'

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

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

A language that instantiates an ergative case-marking pattern in a relatively pure way is Archi (North-Caucasian, Daghestanian; see Kibrik (1979)). DP_{ext} of V_t is singled out and marked by ergative case; all other primary arguments receive

[1] This extension of the traditional case terminology to agreement-marking may be more common for ergative systems than for accusative systems; see, e.g., Bickel & Nichols (2001).

[2] Overt argument DPs are usually optional in head-marking languages; I 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.

absolutive case. (4-a) provides an intransitive context, (4-b) a transitive one.[3]

(4) a. Dija-Ø w-irx̄$_{\circ}$in
father:I-SG.ABS I.SG-work
'Father is working.'

b. 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
'Father is baking the bread.' (Kibrik (1979, 67))

Finally, Sierra Popoluca (Meso-American, Mixe-Zoque; see Elson (1960), Marlett (1986)) exhibits an ergative encoding pattern that relies on agreement-marking. DP_{ext} of V_t is encoded by one type of agreement marker (ergative); all other primary arguments are encoded by another type of agreement marker (absolutive).[4] (5-ab) illustrate intransitive contexts; (5-cd) provide transitive contexts.

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

b. A-pɨ:šiñ
1.ABS-man
'I am a man.'

c. A-Ø-koʔc-pa
1.ABS-3.ERG-hit-INC
'He is hitting me.'

d. Ø-Aŋ-koʔc-pa
3.ABS-1.ERG-hit-INC
'I am hitting him.' (Elson (1960, 208))

These examples may suffice as an illustration of the two basic argument encoding patterns, by case-marking and by agreement-marking. Needless to say, closer scrutiny reveals the actual situation to be more involved in all four languages, with various interfering factors emerging that blur the simple picture arising on the basis of the data presented here. Still, the core of the systems of argument encoding in these languages is either (1-a) or (1-b), and these two patterns need to be derived in a simple and general way. What follows is an attempt to do this by resolving an indeterminacy in the application of elementary minimalist operations that can independently be observed.

---

[3] I, III are noun classes (there are eight); case markers bear number information (Kibrik (2003, 53ff)).

[4] The agreement markers also indicate person, but not number; the latter plays a minor role in Sierra Popoluca morphology (Elson (1960, 209/218)).

2. A Case of Indeterminacy on the vP Cycle

Let me begin with some background assumptions (based on Chomsky (2000; 2001; 2005a;b)). Assume that syntactic structure is created incrementally, bottom-up, by the elementary operations Merge and Agree, and by Move (which may or may not be a special case of Merge – e.g., "internal" Merge –, and which will not play a major role in what follows). For present purposes, the operations Merge and Agree can be understood as in (6) and (7), respectively.[5]

(6) *Merge*:
α can be merged with β, forming a projection of α, if α bears a subcategorization feature [•F•] and F is the label of β.

According to (6), Merge operations do not come for free (as assumed by Chomsky (2001; 2005a), among others). Rather, they are driven by subcategorization features (which I note here as [•F•], following Heck & Müller (2007)); see Svenonius (1994), Collins (2003), Adger (2003), Lechner (2004), Kobele (2006) Sternefeld (2006), and Pesetsky & Torrego (2006).[6]

(7) *Agree*:
α can agree 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.[7]
   b. α m-commands β.[8]
   c. There is no δ such that (i) and (ii) hold:
      (i) δ is closer to α than β.[9]
      (ii) δ bears a feature [F] that has not yet participated in Agree.

---

[5] In (6) and in (7), α, β, δ stand for categories.

[6] Merge of adverbs may or may not require additional assumptions on this approach; not much depends on this in the present context, though.

[7] Starring a feature indicates its probe status, here and in what follows; see Roberts & Roussou (2002), Adger (2003), and Sternefeld (2006) for this kind of notational device.

[8] This permits an Agree relation between a head and its specifier, as seems natural. This assumtion will turn out to be crucial for the analysis. It should be noted, though, that Chomsky (2001; 2005a) explicitly rejects such a possibility.

[9] δ is closer to α than β if the path from δ to α is shorter than the path from β to α. 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. (See Müller (1998, 130); also cf. Pesetsky (1982, 289), Collins (1994, 56).) The length of a path is determined by its cardinality. It follows that the specifier and the complement of a head qualify as equally close to the head; and that the specifier of a head is closer to the head than a category that is further embedded in the complement of the head.

Thus, Agree operations are driven by a probe seeking a goal (7-a), require m-command (7-b), and obey minimality (7-c). I assume that Agree needs only identity of probe and goal features to apply, and can thus apply if probe and goal differ in their feature value (i.e., if the feature specifications are different); but if it does so, it is unsuccessful and creates a crash of the derivation.[10]

Suppose further (following Chomsky (2000; 2001)) that the basic clause structure consists of CP, TP, vP, and VP; that lexical items that are to participate in derivations are selected from the lexicon pre-syntactically, and assembled in a numeration N (or lexical array); that DP_{int} is merged in VP, whereas DP_{ext} is merged in vP, as a specifier; and, finally, that 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.

More specifically, I will assume that that there is only one structural argument encoding feature, CASE, which can have two values: ext(ernal) and int(ernal) (determined with respect to vP, the predicate domain). The feature specifications [CASE:ext] and [CASE:int] replace the traditional feature specifications [CASE:nom], [CASE:acc], [CASE:abs], [CASE:erg]. [CASE] features figure in Agree relations involving T/v and DP, where T bears a probe [∗CASE:ext∗] requiring a matching [CASE:ext] goal on DP, and v bears a probe [∗CASE:int∗] requiring a matching [CASE:int] goal on DP.[11] 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 (see, e.g., Bobaljik & Wurmbrand (2003)): Argument encoding proceeds by case marking if [CASE:α] is morphologically realized on DP; it proceeds by agreement-marking if

[10] This implies a checking (rather than valuation) approach to Agree. However, all that follows would in principle also be compatible with a valuation approach; see Heck & Müller (2007).

[11] This deviates from Chomsky (2001, 6). Still, what follows would in its essentials also be compatible with the assumption that some other features (e.g., Φ-features) on T/v act as probes forcing Agree with DP, and CASE is part of the feature bundle Γ in the sense of (7). However, Chomsky further assumes that CASE is 'not a feature of [...] T, v' (even though 'the value assigned depends on the probe: nominative for T, accusative for v'), which might raise questions concerning agreement-marking under present assumptions.

[∗CASE:α∗] is morphologically realized on T/v.[12,13]

Independently of these specific assumptions about the values of CASE, it is a conspicuous property of the overall system that v (unlike T or V) plays a dual role: It participates in a (first) Merge operation with a DP, and it also participates in an Agree relation with a DP. I will now argue that this dual role has far-reaching consequences for the nature of argument encoding in a language.

Consider first 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.[14] At this point, an indeterminacy in rule application arises: The next operation could be either Agree(v,DP_{int}) or Merge(DP_{ext},v). Based on economy considerations, Chomsky (2001) proposes an Earliness requirement for syntactic operations (see Pesetsky (1989)).[15] Given Earliness, operations like Merge and Agree must apply as soon as their structural conditions are met, which they both are at stage Σ in the derivation under consideration. Consequently, there is a dilemma: Only one operation can apply first, as required by Earliness. In view of this, one might conclude that an Earliness requirement should be abandoned for either Merge or Agree, so as to resolve the indeterminacy. However, such a step would make it necessary to deny all empirical relevance of Earliness for one of the two operations,

---

[12] The two options are not mutually incompatible and often co-exist to some extent in a single language (cf., e.g., nominative encoding via case and agreement in Icelandic); but see Nichols (1986) for some distributional asymmetries. In languages that employ both case and agreement, the encoding patterns can sometimes be mixed, such that, e.g., case marking involves an ergative encoding pattern, and agreement involves an accusative encoding pattern. In these cases, I will take the case marking pattern to be primary. For now, I will have to leave open the question of which additional assumptions are necessary (in the approach to be developed below) to derive the diverging agreement pattern.

[13] Morphological agreement marking on T/v requires complex head formation (involving T, v, V), at least in the languages under consideration. I assume that this is accomplished by head movement (and, perhaps, head lowering), followed by post-syntactic insertion of agreement markers into T/v (Halle & Marantz (1993)). See Embick & Noyer (2001), Bobaljik (2002) for discussion of the role of head movement in this; and Müller (2006) for an account of the morphology of agreement-marking in Sierra Popoluca along these lines.

[14] The workspace of the derivation comprises items in the numeration and phrases that have been created independently; DP_{ext} belongs to the former if it is a bare lexical item, and to the latter if it has been created via Merge. See, among others, Frampton & Gutman (1999) and Hornstein (2001) for relevant discussion.

[15] See Chomsky (2001, 15): "With the motivation for Procrastinate gone, considerations of efficient computation would lead us to expect something like the opposite: Perform computations as quickly

and it would also be at variance with the economy-based motivation.[16] In contrast, I would like to contend that conflicts of this type are real, and must be resolved in a language by giving one Earliness requirement priority over the other in the case of conflict – in other words, by ranking the two requirements.[17] It turns out that this not only resolves the indeterminacy encountered on the vP cycle; it is in fact all that needs to be assumed to derive the core difference between accusative and ergative encoding patterns.

3. Transitive Contexts: The Order of Elementary Operations

Suppose first that a language gives priority to the Earliness condition on Agree in the case of conflict. Then, an accusative pattern arises (see (8-a)): At stage Σ, Agree(v,DP_{int}) applies first (step (i)). Since v is marked [$*$CASE:int$*$], this ensures a [CASE:int] specification on DP_{int}. If DP_{int} is specified as [CASE:ext], Agree(v,DP_{int}) applies unsuccessfully, and the derivation crashes.[18] 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 requires [CASE:ext] on DP_{ext} (step (iii)). 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. This accounts for argument encoding in transitive contexts in languages like Icelandic and Navajo: The internal argument is marked by the internal CASE, the external argument is marked by the external CASE.[19]

---

as possible."

[16] Rezac (2003, 158), in discussing stage Σ, tacitly presupposes that Earliness holds only for Agree (even though he envisages Agree(v,DP_{ext}) as a general possibility underlying cases of 'agreement displacement'). However, there is empirical evidence for an Earliness requirement for Merge, and such a requirement has been assumed in practice; cf. the discussion of Merge before Move in Chomsky (1995; 2000; 2001).

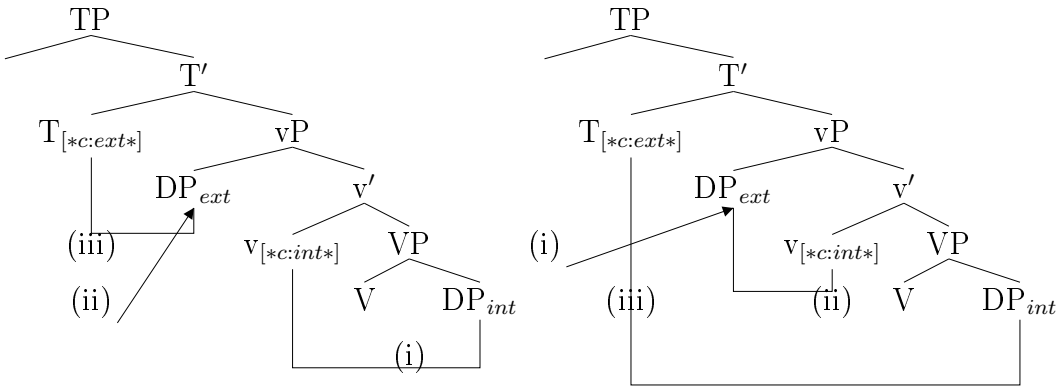
[17] This amounts to an optimization procedure, with minimal violability of the lower-ranked requirement; see Prince & Smolensky (1993). However, the optimization involved here is extremely local (competing candidates are derivational steps), which avoids the complexity problems incurred by standard optimization procedures; see Heck & Müller (2000; 2003). Note also that the same kind of local optimization procedure underlies the Merge before Move principle.

[18] Recall that I have adopted a checking approach to Agree relations like CASE assignment (and not a valuation approach). Under a valuation approach, a v marked [$*$CASE:int$*$] would automatically instantiate [CASE:int] on DP_{int} (thereby raising questions for correlations between interpretatibility and valuation that are standardly assumed), so that the problematic (non-matching) situation could not arise in the first place. As noted, the issue of checking vs. valuation is irrelevant for the approach to variation in argument encoding adopted here.

[19] In all languages discussed in this section, Agree triggered by [$*$CASE:$\alpha*$] also affects Φ-features.

In contrast, suppose now that a language gives priority to the Earliness condition on Merge. Then, an ergative pattern arises (see (8-b)): At stage Σ, Merge(DP_{ext},v) must apply first (step (i)). Crucially, DP_{ext} is now closer to v than DP_{int} (cf. note 9), and given that Agree relations are subject to a minimality requirement and require only m-command by the probe (see (7)), the next operation will have to be Agree(v,DP_{ext}), in a specifier/head configuration (step (ii)). This requires [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}.[20] 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. This accounts for argument encoding in transitive contexts in languages like Archi and Sierra Popoluca: The internal argument is marked by the external CASE; the external argument is marked by the internal CASE.[21]

(8) a. *Agree before Merge: accusative* b. *Merge before Agree: ergative*



To sum up so far, I have proposed an account of the difference between ergative and accusative systems of argument encoding in transitive contexts that has the following properties (which, taken together, set it apart from all alternative analyses

[20] This Agree operation is just local enough to be in accordance with the liberal version of the Phase Impenetrability Condition (PIC) in Chomsky (2001, 14) (or with the 'alternative' interpretation of the PIC that is available to languages; see Richards (2004; 2007)). (Also, DP_{ext} does not intervene, given (7-c)).

[21] Some remarks are due on how the present approach is related to other analyses that identify a difference in structural CASE assignment as the source of the two basic argument encoding types (as opposed to differences in projection, as in Marantz (1984), or differences in lexical CASE assignment, as in Nash (1996), Alexiadou (2001), and Woolford (2001)). The analyses in Levin & Massam (1985), Chomsky (1995, ch.3), Bobaljik (1993), Laka (1993), Rezac (2003), and Bobaljik & Branigan (2006) differ from the one given here in that ergative is identified with nominative, and absolutive with accusative. Bittner & Hale (1996b) identify absolutive and nominative but treat ergative and accusative differently. The closest predecessor of the present proposal is the analysis in Murasugi (1992) (also see Jelinek (1993), Ura (2000; 2006)), where nominative is identified with absolutive, and ergative with accusative.

I am aware of; see footnote 21): First, the projection of arguments is identical in both encoding systems. Second, no semantically irrelevant projections (like Agr_SP, Agr_OP, etc.) need to be assumed, in line with the program laid out in Chomsky (1995). Third, CASE determination is independent of movement. Fourth, the analysis identifies ERG with ACC, and ABS with NOM. The former CASEs are internal (to vP); the latter ones are external.[22] Finally, it is worth pointing out that no recourse is made to arbitrary parametrizations – the indeterminacy in rule application on the vP cycle arises independently, and Earliness requirements are independently motivated for syntactic operations, so some resolution of the kind sketched here must be assumed anyway.[23]

4. Intransitive Contexts: Case Feature Specifications in Numerations

Consider next intransitive contexts. Unchecked probes lead to a crash of the derivation; hence, [$*$CASE:$\alpha*$] must be absent on either T or v in the derivation if only one DP is present that provides a matching goal feature specification [CASE:α]. Thus, again, there is an indeterminacy, and again, the problem arises independently of spe-

[22] Independent evidence for this treatment of ergative and absolutive as essentially identical cases may come from the fact that nominative and absolutive are generally morphologically less marked than ergative and accusative (see Comrie (1989, 126), Dixon (1994, 11); and Cysouw et al. (2006) for the exception to the rule). In the present approach, this can be interpreted as a preference for morphological realization of internal structural CASE (i.e., v-related case) over external structural CASE (i.e., T-related case). However, this argument may not be conclusive. Adopting an approach where T is considered responsible for nominative and ergative, and v for accusative and absolutive, Chomsky (1993) suggests that the correct generalization with respect to morphological realization might be that "the "active" element typically assigns a less-marked Case to its Spec." A similar kind of approach is developed by Bobaljik (1993), based on an Obligatory Case Parameter. According to this parameter, one of the two core cases is obligatory. In accusative languages, the obligatory case is the case assigned by Agr_S/T (nominative/ergative); in ergative languages, it is the case assigned by AGR_O/v (accusative/absolutive). With respect to the morphological realization asymmetry, Bobaljik (1993, 51) states: "Presumably, the observed morphological tendency towards null morphology for these Cases [i.e., nominative and absolutive] is a reflection of this obligatory status."

[23] In contrast, existing analyses that share the same basic characterization of cases (ergative as accusative, and absolutive as nominative) need to resort to specific parameters without independent motivation. Thus, Murasugi (1992) assumes that the basic argument encoding parameter can

cific assumptions about CASE feature values.[24] I will suggest that several principled solutions are available.

Consider a derivation that fails to provide a matching goal feature specification for each probe feature specification that it employs. Such a derivation is doomed from the start. It should therefore be excluded in some general way. A place where this can be ensured straightforwardly is the numeration – a component of grammar that does not yet involve structure (outside of individual lexical items) but provides just enough information to formulate constraints that reduce the number of unsuccessful derivations. For concreteness, I assume the following constraint on numerations:[25]

(9) *Feature Balance*:
For every feature specification [∗F:α∗], there must be a matching feature specification [F:α].

It follows that either [∗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. But which of the two? One possibility is suggested by markedness considerations: [(∗)CASE:ext(∗)] (nominative/absolutive) is unmarked, [(∗)CASE:int(∗)] (accusative/ergative) is marked, both from a syntactic and from a morphological point of view. Syntactically, nominative/absolutive is the type of CASE used in default contexts. Morphologically, at least as a robust tendency, nominative and absolutive markers are segmentally less complex than accusative and ergative markers (see footnote 22). Thus, assume that (9) is respected in intransitive contexts by maintaining the unmarked feature specification. Then, [∗CASE:ext∗] on T has to show up, and [∗CASE:int∗] cannot be instantiated on v in the numeration.[26] Consequently, the sole argument of an

---

ultimately be reduced to the question of whether T or v (or, in her terms: Agr_S or Agr_O) is "strong" (also recall Chomsky's (1995) notion of "active" functional head); but there is no morphological correlate on the functional head associated with this notion of "strength". Alternatively, Ura (2006) assumes that the ergative parameter consists in whether or not an external argument in Specv can undergo Agree in a base-generated position – if it can, case is assigned to it by v, if not, by T.

[24] A faithfully updated version of Burzio's generalization ("v can bear [∗CASE:int∗] iff V takes a DP_{ext}", cf. Burzio (1986, 185)) would still require an auxiliary assumption to derive the patterns in (1) (the problem is to ensure that DP_{ext} of V_i cannot be marked by accusative/ergative).

[25] This constraint may possibly be conceived of as a special case of a more general requirement for numerations, which, e.g., might also ensure the presence of exactly n lexical items that can serve as arguments for every n-place predicate (essentially, a version of the Θ-Criterion). Also compare Stabler's (1996) discussion of count invariants.

[26] Alternatively: [∗CASE:int∗] is deleted on v in the numeration. One may either assume that (finite) T and v bear CASE features as a lexical property, which can then be deleted in the numeration if constraints like Feature Balance force this; or that CASE features are inserted on T and

intransitive predicate (DP_{ext} or D_{int}) is predicted to be encoded by [(∗)CASE:ext(∗)] (nominative/absolutive), after Agree(T,DP_{ext}) or Agree(T,DP_{int}), which captures the situation in the types of language discussed so far.

However, suppose now that there is a second way for a language to respect (9): In the numeration, a CASE feature specification must be matched by the argument type of a D with respect to markedness; this can be viewed as an iconicity constraint on numerations. The unmarked situation for an argument of a predicate is to be merged in that predicate's projection; 'externalization' of an argument can be viewed as a special operation in argument structures (see, e.g., Williams (1981)) which has the effect that the subcategorization feature [•D•] introducing an external argument is located on v rather than on V. Consequently, with respect to argument type, DP_{ext} is inherently more marked than a DP_{int}. Under this assumption, 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}), and an unmarked feature specification ([∗CASE:ext∗] on T) occurs in the presence of a V taking an unmarked argument (DP_{int}). A language that chooses this option does not differ from the languages considered thus far in transitive contexts, but it does in intransitive contexts. Suppose that such a language exhibits an ergative marking pattern (by giving priority to Merge over Agree on the vP cycle). Then, DP_{int} undergoes an Agree(T,DP_{int}) operation and is encoded by absolutive in intransitive contexts, whereas DP_{ext} participates in Agree(v,DP_{ext}) and is encoded by ergative. This way, an 'active' system of split ergativity arises; see (10).

(10)

Active ergative marking

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

Again restricting attention to the core system, (10-a) is instantiated in languages like Basque (with case) and Guaraní (with agreement); see (11), (12), respectively.

(11) 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.'

---

v in the numeration by redundancy rules, which can then be blocked by constraints like Feature Balance. It is hard to see how the two options could make a difference empirically; for the sake of concreteness, I presuppose the second (arguably somewhat simpler) approach, here and in what follows.

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))

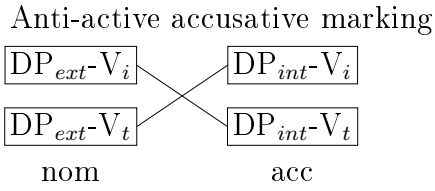
(12) a. Še-manuʔa
1.SG.ABS-remember
'I remember.'

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))

The present analysis does not per se exclude an 'anti-active' pattern, as in (13). Anti-active marking would arise in an accusative system that instantiates (or 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. However, there is an obvious problem with (10-b) (see Bechert (1979)): In an anti-active pattern, there is not a single implicational relation between CASE feature specification and argument type. Consequently, the pattern is extremely dysfunctional and poses severe difficulties for language acquisition.[27]

(13)

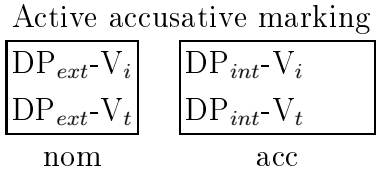


Finally, there could be a third principled way of selecting a unique CASE feature in intransitive contexts in order to respect (9) (next to instantiation of the unmarked CASE feature, and instantiation of the iconic CASE feature). Suppose that, in an accusative system (that gives priority to Agree over Merge on the vP level), the internal CASE feature shows up with internal arguments, and the external CASE feature shows up with external arguments; i.e., there is a matching requirement not with respect to markedness (marked argument type corresponds to marked CASE feature), but with respect to status (external argument corresponds to external CASE feature). This will give rise to an active accusative pattern, as in (14): v's CASE

[27] This may imply that the pattern is in principle available to the language faculty but unusable in practice, or that optimal design restrictions prevent it from being available in the first place (e.g., by requiring unambiguity of argument identification); I will leave this open.

feature not only determines the CASE of the internal argument in transitive contexts; it is also selected for internal arguments in intransitive contexts. In contrast, T's CASE feature encodes the external argument both in transitive contexts (where v's CASE feature has already been discharged when the external argument is merged), and in intransitive contexts (the external CASE feature is preserved for an external argument).

(14)



Such an encoding pattern is distributionally identical to an active ergative pattern. Evidence distinguishing an active ergative from an active accusative pattern will then have to come from independent sources (among them morphological realization and syntactic ergativity). Plausible candidates for languages instantiating such an active accusative pattern include Eastern Pomo (extinct; Hokan, California) and Acehnese (Austronesian, Northern Sumatra); see Bittner & Hale (1996b). Relevant examples from Eastern Pomo are given in (15).

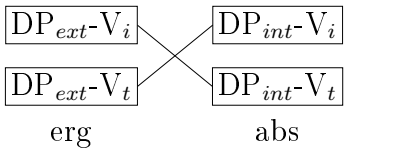
(15) a. Míip míip-al sáaka
he.NOM him-ACC killed
'He killed him.'

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.'

We have seen above that the preservation of the iconic CASE feature leads to a dysfunctional anti-active encoding pattern in accusative language types. Similarly, the question arises as to what happens with a preservation of the status-matching CASE feature in ergative language types. The answer is straightforward: This way, an anti-active ergative encoding pattern will arise that is just as dysfunctional as its accusative counterpart; see (16).

(16)



Thus, we may conclude that there are three major strategies to comply with requirement (9) in intransitive contexts: Either the unmarked CASE feature is preserved in

numerations (which derives the canonical ergative and accusative marking patterns); or the CASE feature is maintained that matches the sole remaining argument DP in either iconicity (yielding an active ergative pattern and a dysfunctional anti-active accusative patten) or status (yielding an active accusative pattern and a dysfunctional anti-active ergative pattern). One may speculate that the latter two strategies represent more marked options.[28]

5. Further Cases of Split Ergativity

There are other instances of split ergativity, in addition to an active marking pattern – most notably, tense/aspect-based split ergativitiy, as in Burushaski (see Dixon (1994, 97-101), Georgian (see Comrie (1978), Nash (1996), Ura (2006)), and Hindi (see Mahajan (1990)); clause-type based split ergativity, as in Sierra Popoluca (see Elson (1960)); and person-based split ergativity, as in Dyirbal (see Dixon (1994)). The goal of this section is to show how these further cases of split ergativity can be integrated into the present analysis. To this end, I will first present a minimally different version of the approach laid out in section 2 above; the reason for this will become clear when I turn to tense/aspect-based split ergativity in Hindi after that.

5.1. Feature Hierarchies

Recall the Agree/Merge indeterminacy problem at stage Σ on the vP level: v has both a subcategorization feature [•D•] that introduces the external argument, and a CASE feature [∗CASE:int∗] that is responsible for the realization of internal CASE (ergative/accusative). Given Earliness requirements for Merge and Agree, a conflict

---

[28] It has sometimes been suggested that active encoding patterns do not actually exist but rather represent instances of systematic, hidden transitivity. See, e.g., Bobaljik (1993), Laka (1993), Nash (1996), and Bittner & Hale (1996a;b), among others. On this view, what looks like an intransitive context with ergative marking in languages like Basque, Guaraní, Hindi, and Georgian is really a transitive context with a hidden internal argument (which can, e.g., be overtly realized as a cognate object); sometimes the presence of the internal argument is suggested by overt agreement morphology (e.g., in Basque). Pure ergative encoding patterns, as in languages like Archi, Yup′ik, and Sierra Popoluca, may then arise because the internal argument of the relevant verbs is incorporated into V; as a result, V would become intransitive.
I am skeptical that such an approach can cover all cases of active encoding patterns. (It is also instructive to note that a concept of hidden transitivity is not invoked in optimality-theoretic approaches like Kiparsky (1999), Stiebels (2000; 2002), Wunderlich (2000), Woolford (2001), and Lee (2003), where deriving active patterns from the theory does not pose a problem but rather follows straightforwardly from factorial typology.) However, it is worth pointing out that a hidden transitivity approach to active encoding patterns would be compatible with the present approach without further ado if we were to assume that only the option of preserving the unmarked CASE feature (i.e., the CASE feature of T) is available in intransitive contexts in the numeration.

arises, and this can be resolved by giving priority to one of the two Earliness requirements – which one, is subject to language-specific parametrization.[29] As noted, this amounts to a local optimization procedure in syntax: Either the Earliness requirement for Merge outranks the Earliness requirement for Agree, or vice versa; and the lower-ranked requirement can be minimally violated (by postponing the respective operation by one derivational step). However, there is an alternative way of implementing the two possible solutions to the intederminacy problem at stage Σ that does without constraint ranking and constraint violability; one that may in fact be independently motivated. Consider the question of how linking is brought about in current derivational syntactic theories, i.e., how the order of Θ-roles in argument structures of predicates in the lexicon is mirrored by argument realization in syntax.[30] For examples like (17), the task is to derive that *John*$_1$ is interpreted as AGENT, *a book*$_2$ as THEME, and *Mary*$_3$ as GOAL.

(17) John$_1$ gave a book$_2$ to Mary$_3$

One possible strategy is to assume that syntactic positions are provided with fixed argument structure correlates, such that, e.g., a DP daughter of vP is interpreted as AGENT, a DP daughter of VP is interpreted as THEME, and a PP daughter of V′ is interpreted as GOAL; such an approach is adopted in Adger (2003). On this view, an example like (18) is classified as ungrammatical because it emerges as uninterpretable: The VP-internal arguments cannot be associated with Θ-roles.

(18) *[$_{vP}$ John gave+v [$_{VP}$ to Mary t_V a book]]
AGENT ?? ??

However, it is not really clear that this is the right approach to take: A sentence like (18) can perfectly well be understood by speakers of English – it just happens to violate formal rules of grammar. I would therefore like to adopt another approach to linking in minimalist grammars, one that has its roots in categorial grammar and has a long tradition in transformational and phrase structure grammar (see Lewis (1972), Pollard & Sag (1994), Wunderlich (1997), and Lechner (2004), among many others). According to this alternative approach to linking, Θ-roles are ordered in lexical entries of predicates, and they are mapped to a list of categorial subcategorization features (i.e., structure-building features: [•F•]) in reverse order, as schematically

[29] Or, as argued in Heck & Müller (2007), phase-specific parametrization – i.e., the resolution of the indeterminacy on the vP level may differ from the resolution of the indeterminacy on the CP level, or on the DP level, within a single language.

[30] I am assuming here a standard approach to argument structure that relies on ordered lexical entries which predict a hierarchy of Θ-roles (see, e.g., Bierwisch (1988), Wunderlich (1997), and Heim & Kratzer (1998)). Things would be different under radical approaches like the one developed in Borer (2004), where argument structures are not basic, but are read off syntactic representations.

depicted in (19). There must then be a condition ensuring that subcategorization features are discharged one after the other, beginning at the top of the hierarchy (see below for a specific suggestion).

(19) a. Θ-*roles*:
$\Theta_1 \gg \Theta_2 \gg \Theta_3$ (AGENT $\gg$ THEME $\gg$ GOAL)

b. *Subcategorization features*:
$[\bullet \mathrm{P} \bullet]_3 \succ [\bullet \mathrm{D} \bullet]_2 \succ [\bullet \mathrm{D} \bullet]_1$

In addition, I assume that there can also be subcategorization features that do not go back to Θ-grids. These kinds of subcategorization features play a role in structure-building operations involving functional categories, and they also enter argument lists of lexical items. For example, VP is not Θ-marked by v, but v has a subcategorization feature $[\bullet \mathrm{V} \bullet]$ that permits Merge of v and VP; and similar reasonings apply in the case of Merge (T,vP) and Merge (C,TP). At this point, the question arises of how an external argument DP comes to be base-generated in the specifier of v. Based on Larson (1988) and subsequent work, two basic options have been pursued. One possibility (adopted in approaches that correlate v with causation or some related semantic concept; see Hale & Keyser (2002), Harley (1995), Kratzer (1996), Adger (2003), Ramchand (2003), Schäfer (2007), and references cited in these works) is that AGENT DPs are introduced by v. In the present approach, this would amount to a feature list $[\bullet \mathrm{V} \bullet] \succ [\bullet \mathrm{D} \bullet]$ on v, with V discharged by Merge (v,VP) before D is discharged by Merge (v′,DP). On this view, transitive verbs take only one argument; and ditransitive verbs subcategorize for two (rather than three) arguments. Alternatively, v is motivated solely by considerations pertaining to phrase structure geometry; external arguments remain true arguments of V, even though they are merged in the specifier of v (see Haider (2000; 2006) for an analysis along these lines, and Georgi & Müller (2007) for an implementation of this idea in terms of head movement by reprojection). Here I adopt the former view. It can then be concluded that v has two subcategorization features that trigger Merge – one for the VP, and one for the external argument DP –, and it has a probe feature that triggers Agree with an argument that gets encoded by v.[31] Subcategorization features ($[\bullet \mathrm{F} \bullet]$) must be *ordered* on lexical items (like v), i.e., they are part of a stack. How do probe features ($[*\mathrm{F}*]$) of a lexical item (say, v) fit into this? Suppose that they can in principle be interleaved with structure-building features ($[\bullet \mathrm{F} \bullet]$) on a lexical item; i.e., it is not necessarily the case that all subcategorization features

[31] Of course, v has two such subcategorization features only in clauses in which an external argument is present, not in intransitive unaccusative contexts. See Chomsky (2001) for a systematic distinction between the two types of v.

must be checked before the first probe feature of a lexical item can be checked (however, a probe feature on top of feature stack is always going to lead to a crash of the derivation because it can never be discharged – at the point where a topmost probe feature must be checked, there is no complement – let alone specifier – yet in which it could possibly find a goal). As noted, given the existence of feature stacks associated with lexical items (possibly involving a mix of subcategorization features and probe features), there has to be a condition that states that only the highest feature on the feature hierarchy is visible for Agree or Merge operations at any given stage of the derivation. This condition can be formulated as part of a general Earliness requirement; cf. (20).

(20) *Earliness*:

a. An operation-inducing feature ([•F•] or [∗F∗]) must be checked immediately.

b. Only the topmost operation-inducing feature ([•F•] or [∗F∗]) of a lexical item is visible.

Thus, given (20), only the highest feature on the feature hierarchy is visible for Agree and Merge at any given stage of the derivation. The concept of feature checking that is required for this analysis involves the notion of discharge: A probe or subcategorization feature disappears (or becomes inert) after having triggered an operation (Merge or Agree), and thus makes room for the next-lower feature on the hierarchy. On the basis of these assumptions, the ergative/accusative parameter does not rely on different rankings of the Earliness requirements for Merge and Agree; rather, there is only one Earliness requirement, and the parameter is related to the order in which v's [∗CASE:INT∗] probe feature and [•D•] subcategorization feature show up on v's stack of operation-inducing features. This is shown in (21).[32]

---

[32] Note that these hierarchies are only partial. The subcategorization feature that triggers Merge of v and VP (i.e., [•V•]) must invariantly show up on top of both [∗CASE:INT∗] and [•D•] in v's feature stack. This is so for two reasons. First, VP must be merged before an external argument DP is merged in vP. And second (as noted above), probe features cannot be topmost for principled reasons on a lexical item. This excludes four of the six logically possible hierarchies (indicated here by #), leaving only the two hierarchies which correspond to those in (21). See (i-ab) vs. (i-cdef).

(i) a. [•V•] ≻ [∗CASE:INT∗] ≻ [•D•]
b. [•V•] ≻ [•D•] ≻ [∗CASE:INT∗]
c. #[∗CASE:INT∗] ≻ [•V•] ≻ [•D•]
d. #[•D•] ≻ [•V•] ≻ [∗CASE:INT∗]
e. #[∗CASE:INT∗] ≻ [•D•] ≻ [•V•]
f. #[•D•] ≻ [∗CASE:INT∗] ≻ [•V•]

(21) *Ergative/accusative parameter*:

a. [∗CASE:INT∗] ≻ [•D•] on v: accusative encoding pattern

b. [•D•] ≻ [∗CASE:INT∗] on v: ergative encoding pattern

If some language is equipped with a v on which the order is [∗CASE:INT∗] ≻ [•D•], Agree with a VP-internal DP takes place before the external argument DP is merged, and an accusative pattern arises. If, on the other hand, the order on v is [•D•] ≻ [∗CASE:INT∗], an external argument DP is merged first (after v has been merged with VP), and the newly formed specifier turns out to provide the closest goal for v's [∗CASE:INT∗] feature whose turn it is next to be discharged (see (7-c)), yielding an ergative encoding pattern.

So far, this reanalysis might look like a notational variant of the approach laid out in section 3 above.[33] However, unlike the earlier approach, the new analysis turns out to make a simple account of tense/aspect-based split ergativity possible.

5.2. Tense/Aspect-Based Split Ergativity

In Hindi, a nominative-accusative pattern shows up in the imperfective aspect, whereas an ergative-absolutive pattern occurs in the perfective aspect; see Mahajan (1990), Mohanan (1994), Dixon (1994), Woolford (2001), Anand & Nevins (2006), Ura (2006) and Keine (2007), among many others. The following data are taken from Mahajan (1990).[34]

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

---

[33] Still, it might be worth noting that this view of the basic ergative/accusative parameter would be more straightforwardly compatible with approaches that do not envisage constraint ranking as a legitimate concept than the analysis I have adopted so far. Basically, under the present perspective, all parametrization could be assumed to be located in the properties of functional heads; see Borer (1984), Chomsky (1995).

[34] In addition, Hindi exhibits a version of active alignment in perfective contexts: In intransitive contexts, sole arguments of unaccusative verbs are absolutive-marked; in contrast, sole arguments of unergative verbs are ergative-marked – but only (according to standard wisdom) if the external argument can be interpreted as *volitional*. Compare (i-a) with (i-b) (volititional vs. non-volitional interpretation with an unergative verb), and with (i-c) (unaccusative verb); see Mohanan (1994), Lee (2003).

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

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

'Ram (habitually) ate bread.'

b. Raam-ne roTii khaayii thii
Ram-ERG bread-ABS eat.PERF.FEM be.PAST.FEM
'Ram had eaten bread.'

Assuming that the ergative/accusative parameter does not reduce to language-specific ranking of Earliness requirements for Merge and Agree, but different feature hierarchies for [•D•] and [∗CASE:INT∗] on v in a language, a simple solution offers itself for aspect-based split ergativity in Hindi (and related phenomena in other languages): Suppose that a language is equipped with two types of v – one on which the order is [•D•] > [∗CASE:INT∗] (v_1, giving rise to an ergative encoding pattern), and one that has a feature stack including the order [∗CASE:INT∗] > [•D•] (v_2, which produces an accusative encoding pattern). Then, the co-occurrence of the two patterns in a single language is to be expected. The only thing that remains to be ensured for Hindi is that the right kind of v is chosen in the right kind of aspect. This is a simple matter of selection. Given that aspectual information is located on T (though one could just as well postulate a separate functional category Asp between T and v), a perfective T selects v_1, and an imperfective T selects v_2. For the sake of concreteness, this can be achieved if it is assumed that T has a subcategorization feature [•v•], and this feature is accompanied by a probe feature [∗1∗] if T is [+perf], and by a probe feature [∗2∗] if T is [–perf]; corresponding goal features [1], [2] characterize the two v items of the language.[35]

In contrast, note that the version of the present approach to ergative vs. accusative patterns of argument encoding developed in the previous part of this paper does not permit such a simple approach to tense/aspect-based split ergativity: One would have to assume that Earliness requirements are not associated with grammars

---

'Ram fell hard.'

I have nothing to say here about the question of whether the data in (i) could be integrated directly into what is said about active ergative marking in section 4 (e.g., by assuming the non-volitional subject in (i-a) to be VP-internal after all), or whether they require some (perhaps non-trivial) extension of the present system.

[35] This is essentially as in Gazdar et al. (1985). Alternatively, instead of using diacritics that mediate between T's aspectual feature and the order of probe and subcategorization features on v's feature stack, one might pursue the hypothesis that T can directly "see" what v's feature stack looks like, and select v appropriately. If one assumes that operation-inducing features on v are discharged by the operation they trigger, selection of v by T will presumably have to be handled in the numeration, rather than in the syntax (when T merges with vP, v has already lost its operation-inducing features); e.g., via co-occurrence restrictions. Alternatively, operation-inducing features may simply become inert after having been checked, in the sense that they make the next-lower feature accessible (see (20)) but are still visible for selection. Resolving these technical issues in one or the other way does not bear on the basic analysis, though.

as a whole, or with phases (see Heck & Müller (2007) and footnote 29); rather, they would have to be specified for individual lexical items, distinguishing between two types of v in the case at hand. Such an assumption would certainly be far from impossible, but it might be viewed as somewhat less attractive than the present solution.

Under the present approach, then, ergative and accusative turn out to be realizations of the very same CASE feature in Hindi. Still, this does not imply that they will have to be realized in the same way. Indeed, they are realized differently in Hindi – by *-ne* in one case, and by Ø or *-ko* in the other case.[36] One and the same abstract CASE feature [∗CASE:INT∗] may well be realized as x in context A (external argument DP), and as y in context B (internal argument DP), given that morphological spell-out can depend on contextual information (see Halle & Marantz (1993), Bobaljik (2000), and Trommer (2003), among many others).

It seems likely that this kind of approach can be generalized so as to cover other instances of tense/aspect-based split ergativity; however, the question requires close investigation for each case that has been suggested in the literature.[37]

From a more general point of view, it can be noted that the present analysis leaves open the question of whether there is an *inherent* relation between, say, past tense (or perfective aspect) and an ergative encoding pattern on the one hand, and non-past tense (or imperfective aspect) and accusative encoding pattern on the other. If such a correlation (as it is suggested, e.g., by Dixon (1994)) can ultimately be shown to exist (to determine this, a large sample of languages would have to be

---

[36] The conditions for choosing among the latter allomorphs are related to general laws of differential object marking. In this context, it is worth noting that it might in fact ultimately be possible to reduce *all* variation in CASE marking in Hindi to issues of morphological realization, on the basis of the assumption that there is but a single syntactic encoding pattern. See Keine (2007) for an analysis along these lines, with impoverishment operations in a Distributed Morphology approach to morphological realization taking over much of the work that is standardly, and also in the present section, attributed to differences in syntactic CASE assignment.

[37] For instance, tense-based split ergativity in Georgian or Burushaski would follow under basically the same kinds of assumptions: If T is [+past], a v is selected that exhibits the order [•D•] > [∗CASE:INT∗]; if T is [–past], it requires a v with the reverse hierarchy [∗CASE:INT∗] > [•D•], which predicts an ergative pattern in the former case, and an accusative pattern in the latter. This analysis may be straightforward for Georgian, but it turns out that the situation might not be quite as simple in Burushaski: In Burushaski, there is no marking whatsoever in (what would be predicted as) the accusative encoding pattern (Dixon (1994, 100)). Therefore, I take it to be an open question whether Burushaski does indeed involve a true syntactic split in encoding patterns, or whether postulating a uniform ergative pattern, with systematic non-realization of the ergative CASE feature in non-past contexts in the morphological component, might offer a more adequate analysis. See the previous footnote.

investigated), this might arguably imply that the present approach would have to be modified so as to capture the generalization. For the time being, it may suffice to note that existing approaches to tense/aspect-based split ergativity generally do not seem to fare much better with respect to the issue of deriving the putative generalization.[38]

5.3. Clause Type-Based Split Ergativity

As shown above (see (5)), Sierra Popoluca exemplifies a relatively canonical system of ergative CASE encoding by agreement (head marking). Still, as noted by Elson (1960, 208) and Marlett (1986, 364), in certain kinds of clauses this system is replaced with an accusative pattern of argument encoding. More specifically, this affects temporal adjunct clauses that do not have a Spanish complementizer (the native temporal complementizer is *mu* ('when'), which alternates with Spanish *cuando* ('when')); and to some extent also clauses embedded under intransitive verbs. Consider (23-ab), which involves an accusative pattern in embedded clauses introduced by *mu*.

(23) a. mu an-nɨk
when 1.NOM-go
'when I went'

b. mu an-iš caːñ
when 1.NOM–see snake
'when I saw a snake'

---

[38] Dixon's (1994) own account remains largely impressionistic, drawing analogies to the typical structure of crime novels. In optimality-theoretic approaches, a uniform pattern arises: Taking the case of Hindi as a representative example, all existing analyses seem to agree that the effect is due to a high-ranked constraint that is active in perfective contexts only, and that ensures that an (otherwise expected) accusative encoding pattern is suppressed in these contexts in favour of an ergative encoding pattern. Thus, Woolford's (2001) high-ranked constraint FAITH-LEX$_{\text{perf}}$ demands that ergative case (assumed to be inherent on a certain class of verbs) is realized in an optimal output; this constraint outranks an opposite constraint *ERG that requires ergative to be absent throughout (it does so successfully in imperfective contexts for which there is no high-ranked FAITH-LEX constraint). Similarly, in Kiparsky's (1999) analysis there is a high-ranked constraint Max([+lr])/[+perf] with the same effect: [+lr] stands for the ergative case, and the constraint demands that this CASE be realized in perfective environments. Given that the general constraint against ergative CASE is ranked lower, ergative is successfully imposed in perfective contexts. Yet another version of this optimality-theoretic reasoning can be found in Lee (2003): A ranking ERG$_{\text{perf}}$ ≫ *ERG confines ergative CASE to perfective environments in Hindi. Finally, Stiebels (2000; 2002) presents an analysis that is minimally different in that the basic logic is reversed: *[+lr]/[–perf] (which prohibits ergative marking in imperfective contexts) outranks a general constraint stating that external arguments in transitive clauses are always marked ergative; this latter, lower-ranked constraint can then only spring into action, and induce ergative case, in

Here, an (internal or external) argument of an intransitive predicate is marked in the same way as the external argument of a transitive verb. This can be taken to imply that, as we have just seen for Hindi (Georgian, Burushaski), two types of v are present in the language: As the default case, v_1 is chosen from the numeration in Sierra Popoluca; on v_1, the relevant operation-inducing subcategorization and probe features are ordered in such a way that they produce an ergative encoding pattern (viz., [•D•] > [∗CASE:INT∗]). However, the language is also equipped with a second v, v_2, which induces an accusative marking pattern (via the feature hierarchy [∗CASE:INT∗] > [•D•]); v_2 is selected by certain kinds of C (viz., either one with the features [+native,+temporal], or one that can be embedded under intransitive verbs). Thus, the account is fully parallel to the one given for tense/aspect-based split ergativity in the preceding section; the only relevant difference is that this time, it is the type of C node (rather than the type of T node) that determines which v is selected – one that induces ergative marking or one that induces accusative marking. At this point, the technical issue arises of how selection of v by C can be accomplished. However, since several plausible possibilities suggest themselves (options include selection mediated by T; selection via feature co-occurrence restrictions that apply in the numeration; and direct selection of one phase head by another, cf.

---

perfective contexts.

As for alternative minimalist approaches, Ura (2006) proposes an analysis that looks fairly simple at first sight: The relevant tense/aspect information responsible for ergative CASE is assumed to be located on v (rather than on T). As a matter of fact, Ura suggests that the CASE feature associated with v *is* the tense/aspect-related feature; so ergative/accusative in effect is tense/aspect of v on DP (see Williams (1994) and Pesetsky & Torrego (2001) for related ideas). In my view, the association of inherent tense/aspect features with v may be considered somewhat dubious; in a system of clausal structure that envisages only two functional heads below C, it should surely be T, not v, where this kind of information is located (also see footnote 7 of Ura (2006, 141)). Alternatively, one might assume that whereas tense/aspect information is inherently located on T, the relevant features may also show up on v as a result of Agree (see, e.g., Adger (2003), who argues for this on the basis of morphological realization). However, one would then either have to give up the assumption that probes are non-interpretable (tense/aspect is interpretable on T, and it would have to be uninterpretable on v), or one would have to abandon the hypothesis that probes c-command goals (if v acts as the probe); note that these are assumptions that can be maintained in the present analysis despite adopting a checking (as opposed to valuation) approach. Furthermore, if tense/aspect on v is a goal feature (with tense/aspect on T an interpretable probe), this feature would have to have a dual status; for CASE assignment to a DP, it would have to be a probe in addition. – Finally, in addition to these problems, which are primarily of a conceptual

Chomsky (2005a)), I will not dwell on this issue here.[39]

Similar clause type-based splits have been reported for other languages (see Dixon (1994, 101-104)), and similar analyses can presumably be given on the basis of the present approach.[40]

5.4. Three-Way Systems

Before I turn to person-based split ergativity, "three-way" languages need to be addressed. Here, ergative CASE and accusative CASE seem to co-exist together with nominative (absolutive) CASE; see, for instance, Dixon (1994), Bittner & Hale (1996b), Woolford (1997), Kiparsky (1999), and Stiebels (2002). The following data from Antekerrepenhe (Central Australia) in (24) and Nez Perce (Penutian) in (25) come from Bittner & Hale (1996a, 51-52) (also see Woolford (1997) for a detailed discussion of Nez Perce).

(24) 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.'

---

and/or technical nature, there is the empirical problem that Ura's analysis requires additional assumptions for languages where ergative CASE does not depend on perfective aspect or past tense.

[39] Note incidentally that the markers that Sierra Popoluca uses for ergative CASE in default contexts correspond to those it uses for nominative CASE in embedded temporal clauses with a native complementizer; similarly, the markers for absolutive CASE in standard environments and for accusative CASE in the restricted context are morphologically identical. At first sight, this might seem to favour theories of argument encoding in which ergative is the same case as nominative, and absolutive the same case as accusative; see Levin & Massam (1985), Chomsky (1995, ch.3), Bobaljik (1993), and other references in footnote 21. This potential problems disappears if morphological realization can take into account contextual information (in addition to the respective case features themselves). In addition, note that the markers used for ergative CASE and for nominative CASE also show up DP-internally as exponents of possession; so they are clearly not confined to a single syntactic domain (like the vP). Still, integrating this morphological evidence would require a reanalysis of the approach to exponence of argument encoding given in Müller (2006).

[40] For instance, in Päri (Nilotic), there is generally an ergative argument encoding pattern, but in purposive clauses, an accusative pattern arises, with the sole (internal or external) argument of an intransitive verb marked in the same way as the external argument of a transitive verb. Again, it seems likely that the relevant difference can be tied to a property of C.

(25) a. Wewúkiye-ne pée-'wi-ye háama-nm
elk-ACC$_j$ 3$_i$.3$_j$-shoot-PRF man-ERG$_i$
'The man shot an elk.'

b. Hi-páayn-a háama
3$_i$-arrive-PRF man-NOM
'The man arrived.'

Since the present approach locates the source for ergative and accusative in the CASE feature of one and the same head (viz., v), it might seem at first sight as though three-way languages pose a severe problem for a syntactic analysis (that identifies two distinct CASEs, ergative and accusative) in the present framework.[41] In view of this state of affairs, one might contemplate assigning the languages in question a syntactically simple (ergative or accusative) marking pattern, where either the ergative is reanalyzed as a nominative in an accusative system, or the accusative is reanalyzed as an absolutive in an ergative system, and the apparent ergative/nominative alternation or accusative/absolutive alternation is accounted for in the morphological component (see, e.g., Murasugi (1992)).

For the sake of concreteness, suppose that three-way systems are basically accusative systems (recall that an absolutive of ergative encoding patterns is typically morphologically unmarked on a DP, whereas a nominative of accusative encoding patterns can be marked on a DP). Then, we have to assume that there are nominative allomorphs, e.g., *le* and Ø in Antekerrepenhe. In Distributed Morphology (Halle & Marantz (1993)), inflectional morphology is post-syntactic: It realizes morpho-syntactic feature bundles that are present in X^0 positions in the syntax. Between syntax and morphology, morpho-syntactic features are sometimes deleted; such a deletion is brought about by impoverishment rules. Suppose now that Antekerrepenhe has an impoverishment rule like (26).

(26) [CASE:EXT] → Ø/__v$_{[\neg *case*]}$

[41] In contrast, optimality-theoretic approaches like those mentioned above predict three-way languages to be entirely unmarked, on a par with regular ergative and accusative argument encoding patterns. Simplifying a bit, these kinds of analyses typically envisage two constraints inducing CASE marking – one that requires ergative marking for external arguments of transitive verbs, and one that requires accusative marking for internal arguments of transitive verbs (call these constraints E and A). In addition, there is a conflicting constraint that blocks realization of CASE marking (*C). Consquently, factorial typology implies that there can be four rankings that produce four basic grammar types: (i) A ranking E ≫ *C ≫ A produces a standard ergative pattern; (ii) a ranking A ≫ *C ≫ E gives rise to an accusative pattern; (iii) *C ≫ E, A results in no CASE marking for either external or internal argument of a transitive verb; (iv), and finally, a ranking E, A ≫ *C creates a three-way language. Arguably, such a treatment fails to reflect the highly marked status of three-way languages cross-linguistically.

According to (26), nominative case cannot be morphologically realized on an external or internal argument of $v_{[\neg *case*]}$, i.e, of a v that does not have a CASE feature to assign.[42] Note that this would imply that checked probe features become inert but do not delete – otherwise a post-syntactic morphology could not distinguish between a v that does not assign CASE in the first place because it shows up in an intransitive structure, and a v that has checked CASE with an internal argument. One might argue that such an analysis gives rise to a potential conceptual problem in that what arguably looks like a functional motivation for ergative encoding in the syntax is mimicked in morphology. I do not think that this problem is a real one, though; quite on the contrary, such an approach would give a functional motivation to impoverishment operations, and thereby strengthen the overall concept. However, a morphological approach may raise other problems that are real; Legate (2005; 2006) (for Warlpiri, Djapu, and Kugu Nganheara) and Bierkandt (2006) (for Diyari) argue that there is evidence for the syntactic presence of three cases. For this reason, I take it to be worth pursuing the question of whether the present approach could be extended to cover three-way systems in syntax after all.

As it turns out, this is very well possible. Proceeding on the assumption that three-way languages are a marked phenomenon, we can assume that what is marked is that v can exceptionally be equipped with *two* [∗CASE:int∗] features. In transitive contexts, there are thus three potential CASE features: [∗CASE:ext∗] on T, and two identical CASE features on v: [∗CASE:int∗], [∗CASE:int∗]. In such a scenario, the very same dilemma arises that we have seen to arise with two CASE features ([∗CASE:ext∗] on T, [∗CASE:int∗] on v) in intransitive contexts: There is one more case feature than there are argument DPs for checking. Again, one of the CASE features has to disappear. As before, suppression of the surplus feature is forced by a general constraint on numerations. Feature Balance is repeated here from (9).

(27) *Feature Balance*:
For every feature specification [∗F:α∗], there must be a matching feature specification [F:α].

Which of the three features (two of them identical) has to go? It seems plausible to assume that [∗CASE:int∗] on v can never go away if there are both DP_{ext} and DP_{int} in the numeration (see Marantz (1991), Bittner & Hale (1996b), and Wunderlich (1997), where [∗CASE:int∗] is in fact defined by the presence of an external argument c-commanding an internal argument). Consequently, if there are two [∗CASE:int∗]

[42] Thus, such an approach to three-way language types would be similar in all relevant respects to the impoverishment-based approach to argument encoding in Hindi developed in Keine (2007) that was mentioned above.

features present on v, [∗CASE:ext∗] cannot be instantiated on T in the numeration in transitive contexts (alternatively, it is deleted; see above). As a result, in accusative as well as ergative systems, DP_{ext} and DP_{int} must both bear [CASE:int] in transitive contexts. However, in intransitive contexts, only the unmarked case feature is instantiated: [∗CASE:ext∗] shows up on T (and no [∗CASE:int∗] feature can show up on v, let alone two of them).

To sum up this subsection, three-way languages can either be integrated into the present approach by pursuing the hypothesis that closer inspection may reveal the underlying systems to involve canonical ergative or accusative encoding patterns after all (with the apparent three-way distinctions accounted for morphologically, e.g., by impoverishment); or they can be handled by assuming that v may exceptionally bear two CASE features. Needless to say, the two possibilities are not mutually exclusive: The morphological approach may well be correct for some languages, and the syntactic approach for others.

5.5. Person-Based Split Ergativity

Let me end this paper with some brief speculations on how to analyze person-based split ergativity. The phenomenon that has received most attention in the literature is person-based split ergativity in Dyirbal (see Dixon (1972; 1994)). In Dyirbal, an external argument DP of a transitive verb is marked ergative if it is a 3rd person pronoun or an item to the right of it on the person/animacy scale in (28) (see Silverstein (1976) for the original scale, and Aissen (1999; 2003) for a systematic reconstruction). In contrast, an internal argument DP of a transitive verb is marked accusative if it is a 1st or 2nd person pronoun. All other types of argument DP fail to be encoded by an overt marker.

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

At least at first sight, Dyirbal would thus seem to belong to the class of languages that exhibit three-way systems, as discussed in the previous section. In line with this, the strategies for analysis are comparable: 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 morphological analysis could look as follows: There is a zero allomorph Ø that results from impoverishment, where impoverishment rules might be motivated by functional considerations incorporating the Silverstein hierarchy in (28). Such an approach would seem to suggest itself for simpler cases of person-based argument

encoding systems, among them most of the cases of differential subject and object marking discussed in Aissen (1999; 2003). For Dyirbal, it would imply postulating a two-case system, with impoverishment operations that preclude morphological realization of CASE features on prototypical external and internal arguments; on this view, the CASE features are only retained (for morphological realization) on 3rd person pronouns (and lower-ranked items on the person/animacy scale) that are external arguments of transitive verbs, and on 1st or 2nd person pronouns that act as internal arguments of transitive verbs; in all other environments, CASE features would be deleted.

Alternatively, one may adopt a syntactic approach that envisages three structural CASES (ergative, accusative, and nominative/absolutive). This would basically be as in the cases discussed in the previous section. However, there would be an additional complication: With simple three-way systems, the only relevant factor determining which CASE features are present is whether the verb is transitive or intransitive. In addition to this difference between transitive and intransitive verbs, CASE feature instantiation in numerations in Dyirbal would have to be sensitive to properties of the arguments (i.e., their rank on the person/animacy scale). Technically, the required rules for CASE feature instantiations in the numeration in languages like Dyirbal do not pose any problem whatsoever; but since I take it to be far from clear that a simpler, purely morphological approach is excluded, I will not pursue the matter any more at this point.

6. Concluding Remarks

Let me sum up the main claims of this paper. I have suggested two parameters for argument encoding which are active in different components of grammar: Whether a language employs accusative marking or ergative marking is decided in the syntax, by resolving an indeterminacy in the order of the elementary operations Merge and Agree on the vP cycle. Whether a language employs active marking or not is decided in the numeration, i.e., pre-syntactically, by resolving an indeterminacy in the preservation of CASE feature specifications in intransitive contexts via markedness (choice of the unmarked feature specification), iconicity (choice of the feature specification with the same markedness status as the argument) or status-matching (choice of the feature specification matching the status – external vs. internal – of the argument).

To the extent that this approach succeeds in capturing the main argument encoding patterns in a simple way, it has potential repercussions on the theory of parametrization: In the original version, it suggests that parametric variation cannot exclusively be due to variation in the (functional) lexicon, and that there must

be a limited decision space in the application of elementary operations in the syntax and in the numeration. However, it has turned out that extending the analysis to cases of tense/aspect-based (or clause-based) split ergativity might suggest a minimal modification of the general approach that ties all parametric variation to properties of lexical items (v, in the case at hand) after all. If this latter approach is on the right track, a more conservative approach to cross-linguistic variation can be maintained.

Furthermore, and independently of which of the two basic versions of the general hypothesis is adopted (ranking Earliness requirements for Merge and Agree vs. diverging feature hierarchies on v), it is worth emphasizing that the present analysis crucially depends on an incremental-derivational approach to syntax; the difference between an accusative and an ergative pattern boils down to whether DP_{ext} is or is not yet part of the structure when the CASE feature of v triggers Agree.

To end this paper, let me stress that what precedes is not intended to be a comprehensive theory of accusative vs. ergative patterns of argument encoding; for this, the analysis would have to be extended in various directions. I will here confine myself to mentioning two of them. First, in this paper I have only been concerned with 'morphological ergativity' (i.e., formal argument encoding by case or agreement), and not at all with 'syntactic ergativity' (i.e., cases where DP_{ext} and DP_{int} of V_i, and DP_{int} of V_t are systematically treated on a par in the syntax by processes different from argument encoding); see Comrie (1989), Bobaljik (1993), Dixon (1994), and Bittner & Hale (1996a), among others. And second, movement to SpecT has been neglected in the preceding discussion; but this operation seems to be related to the nature of argument encoding to some extent. Possibly, these two issues ultimately reduce to the question of which argument qualifies as most 'prominent' (i.e., which argument acquires 'subject' or 'pivot' properties). Relevant factors here include (a) external CASE and (b) external argument status. With accusative marking patterns, the two properties usually converge (with notable exceptions like Icelandic quirky case subjects); with ergative marking patterns, they usually diverge, and this may plausibly be taken to underlie the substantial variation in promotion to subject status that can be observed in the are of languages employing an ergative argument encoding pattern.

Bibliography

Adger, David (2003): *Core Syntax*. Oxford University Press, Oxford, New York.

Aissen, Judith (1999): Markedness and Subject Choice in Optimality Theory, *Natural Language and Linguistic Theory* 17, 673–711.

Aissen, Judith (2003): Differential Object Marking: Iconicity vs. Economy, *Natural Language and Linguistic Theory* 21, 435–483.

Alexiadou, Artemis (2001): *Functional Structure in Nominals*. Benjamins, Amsterdam.

Anand, Pranav & Andrew Nevins (2006): The Locus of Ergative Case Assignment: Evidence from Scope. In: A. Johns, D. Massam & J. Ndayiragije, eds., *Ergativity*. Springer, pp. 3–25.

Baker, Mark (1996): *The Polysynthesis Parameter*. Oxford University Press, New York and Oxford.

Bechert, Johannes (1979): Ergativity and the Constitution of Grammatical Relations. In: F. Plank, ed., *Ergativity*. Academic Press, London, pp. 45–59.

Bickel, Balthasar & Johanna Nichols (2001): Inflectional Morphology. Ms., Universität Leipzig. To appear in T. Shopen (ed.), *Language Typology and Syntactic Description*. Cambridge: Cambridge University Press.

Bierkandt, Lennart (2006): Kasusmorphologie des Diyari. Ein Ansatz im Rahmen der Distribuierten Morphologie. In: G. Müller & J. Trommer, eds., *Subanalysis of Argument Encoding in Distributed Morphology*. Vol. 84 of *Linguistische Arbeitsberichte*, Universität Leipzig, pp. 43–62.

Bierwisch, Manfred (1988): On the Grammar of Local Prepositions. In: M. Bierwisch, W. Motsch & I. Zimmermann, eds., *Syntax, Semantik und Lexikon. Rudolf Růžička zum 65. Geburtstag*. Akademie-Verlag, Berlin, pp. 1–65.

Bittner, Maria & Ken Hale (1996a): Ergativity: Toward a Theory of a Heterogeneous Class, *Linguistic Inquiry* pp. 531–604.

Bittner, Maria & Ken Hale (1996b): The Structural Determination of Case and Agreement, *Linguistic Inquiry* pp. 1–68.

Bobaljik, Jonathan (1993): Ergativity and Ergative Unergatives. In: C. Phillips, ed., *Papers on Case and Agreement II*. Vol. 19 of *MIT Working Papers in Linguistics*, MITWPL, MIT: Cambridge, Mass., pp. 45–88.

Bobaljik, Jonathan (2000): The Ins and Outs of Contextual Allomorphy. In: K. Grohmann & C. Struijke, eds., *University of Maryland Working Papers in Linguistics*. Vol. 10, University of Maryland, College Park, pp. 35–71.

Bobaljik, Jonathan (2002): Realizing Germanic Inflection: Why Morphology Does Not Drive Syntax, *Journal of Comparative Germanic Linguistics* 6, 129–167.

Bobaljik, Jonathan & Phil Branigan (2006): Eccentric Agreement and Multiple Case Checking. In: A. Johns, D. Massam & J. Ndayiragije, eds., *Ergativity*. Springer, pp. 47–77.

Bobaljik, Jonathan & Susi Wurmbrand (2003): Relativized Phases. Ms., University of Connecticut, Storrs.

Borer, Hagit (1984): *Parametric Syntax*. Foris, Dordrecht.

Borer, Hagit (2004): *Structuring Sense. An Exo-Skeletal Trilogy. Vols 1 and 2*. Oxford University Press, Oxford.

Bruening, Benjamin (2001): Syntax at the Edge: Cross-Clausal Phenomena and the Syntax of Passamaquoddy. PhD thesis, MIT, Cambridge, Mass.

Burzio, Luigi (1986): *Italian Syntax*. Kluwer, Dordrecht.

Chomsky, Noam (1993): A Minimalist Program for Syntactic Theory. In: K. Hale & S. J. Keyser, eds., *The View from Building 20*. MIT Press, Cambridge, Mass., pp. 1–52.

Chomsky, Noam (1995): *The Minimalist Program*. MIT Press, Cambridge, Mass.

Chomsky, Noam (2000): Minimalist Inquiries: The Framework. In: R. Martin, D. Michaels & J. Uriagereka, eds., *Step by Step*. MIT Press, Cambridge, Mass., pp. 89–155.

Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Mass., pp. 1–52.
Chomsky, Noam (2005a): On Phases. Ms., MIT, Cambridge, Mass.
Chomsky, Noam (2005b): Three Factors in Language Design, *Linguistic Inquiry* 36, 1–22.
Collins, Chris (1994): Economy of Derivation and the Generalized Proper Binding Condition, *Linguistic Inquiry* 25, 45–61.
Collins, Chris (2003): Eliminating Labels. In: S. D. Epstein & T. D. Seely, eds., *Derivation and Explanation in the Minimalist Program*. Blackwell, Oxford, pp. 42–64.
Comrie, Bernard (1978): Ergativity. In: W. Lehmann, ed., *Syntactic Typology*. Texas University Press, Austin, Texas, pp. 329–394.
Comrie, Bernard (1989): *Language Universals and Linguistic Typology*. 2 edn, Blackwell, Oxford.
Cysouw, Michael, Søren Wichmann & Corinna Handschuh (2006): Marked Nominative or: The Search for S. Ms., Max-Planck-Institute for Evolutionary Anthropology, Leipzig.
Dixon, R.M.W. (1972): *The Dyirbal Language of North Queensland*. Cambridge University Press, Cambridge.
Dixon, R.M.W. (1994): *Ergativity*. Cambridge University Press, Cambridge.
Elson, Ben (1960): Sierra Popoluca Morphology, *International Journal of American Linguistics* 20, 206–223.
Embick, David & Rolf Noyer (2001): Movement Operations after Syntax, *Linguistic Inquiry* 32, 555–595.
Frampton, John & Sam Gutman (1999): Cyclic Computation, *Syntax* pp. 1–27.
Gazdar, Gerald, Ewan Klein, Geoffrey Pullum & Ivan Sag (1985): *Generalized Phrase Structure Grammar*. Blackwell, Oxford.
Georgi, Doreen & Gereon Müller (2007): Noun Phrase Structure by Reprojection. In: J. Trommer & A. Opitz, eds., *1 2 Many*. Vol. 85 of *Linguistische Arbeitsberichte*, Universität Leipzig, pp. 263–301.
Gregores, Emma & Jorge Suárez (1967): *A Description of Colloquial Guaraní*. Mouton, The Hague.
Haider, Hubert (2000): Branching and Discharge. In: P. Coopmans, M. Everaert & J. Grimshaw, eds., *Lexical Specification and Insertion*. Benjamins, Amsterdam, pp. 135–164.
Haider, Hubert (2006): Zufall und Notwendigkeit bei der germanischen VO/OV-Spaltung. Ms., Universität Salzburg.
Hale, Ken & Samuel Jay Keyser (2002): *Prolegomenon to a Theory of Argument Structure*. MIT Press, Cambridge, Mass.
Halle, Morris & Alec Marantz (1993): Distributed Morphology and the Pieces of Inflection. In: K. Hale & S. J. Keyser, eds., *The View from Building 20*. MIT Press, Cambridge, Mass., pp. 111–176.
Harley, Heidi (1995): Subjects, Events, and Licensing. PhD thesis, MIT.
Heck, Fabian & Gereon Müller (2000): Successive Cyclicity, Long-Distance Superiority, and Local Optimization. In: R. Billerey & B. D. Lillehaugen, eds., *Proceedings of WCCFL*. Vol. 19, Cascadilla Press, Somerville, MA, pp. 218–231.
Heck, Fabian & Gereon Müller (2003): Derivational Optimization of Wh-Movement, *Linguistic Analysis* 33, 97–148.
Heck, Fabian & Gereon Müller (2007): Extremely Local Optimization. Proceedings

of WECOL 2006. California State University, Fresno.
Heim, Irene & Angelika Kratzer (1998): *Semantics in Generative Grammar*. Blackwell, Oxford.
Hornstein, Norbert (2001): *Move. A Minimalist Theory of Construal*. Blackwell, Oxford.
Hualde, José Ignacio & Jon Ortiz de Urbina, eds. (2003): *A Grammar of Basque*. Mouton de Gruyter, Berlin.
Jelinek, Eloise (1993): Ergative 'Splits' and Argument Type. In: J. Bobaljik & C. Phillips, eds., *Papers on Case and Agreement I*. Vol. 18 of *MIT Working Papers in Linguistics*, MITWPL, MIT: Cambridge, Mass., pp. 15–42.
Keine, Stefan (2007): Reanalysing Hindi Split Ergativity as a Morphological Phenomenon. In: J. Trommer & A. Opitz, eds., *1 2 Many*. Vol. 85 of *Linguistische Arbeitsberichte*, Universität Leipzig, pp. 73–127.
Kibrik, Aleksandr (1979): Canonical Ergativity and Daghestan Languages. In: F. Plank, ed., *Ergativity*. Academic Press, London, pp. 61–77.
Kibrik, Aleksandr (2003): Nominal Inflection Galore: Daghestanian, with Side Glances at Europe and the World. In: F. Plank, ed., *Noun Phrase Structure in the Languages of Europe*. Mouton de Gruyter, Berlin, pp. 37–112.
Kiparsky, Paul (1999): Analogy and OT: Morphological Change as Emergence of the Unmarked. Ms., Stanford University.
Kobele, Greg (2006): Generating Copies. PhD thesis, UCLA, Los Angeles.
Kratzer, Angelika (1996): Severing the External Argument from its Verb. In: J. Rooryck & L. Zaring, eds., *Phrase Structure and the Lexicon*. Kluwer, Dordrecht.
Kress, Bruno (1982): *Isländische Grammatik*. 1 edn, VEB Verlag Enzyklopädie, Leipzig.
Laka, Itziar (1993): Unergatives that Assign Ergative, Unaccusatives that Assign Accusative. In: J. Bobaljik & C. Phillips, eds., *Papers on Case and Agreement I*. Vol. 18 of *MIT Working Papers in Linguistics*, MITWPL, MIT: Cambridge, Mass., pp. 149–172.
Larson, Richard (1988): On the Double Object Construction, *Linguistic Inquiry* 19, 335–391.
Lechner, Winfried (2004): Extending and Reducing the MLC. In: A. Stepanov, G. Fanselow & R. Vogel, eds., *Minimality Effects in Syntax*. Mouton de Gruyter, Berlin, pp. 205–240.
Lee, Hanjung (2003): Parallel Optimization in Case Systems. Ms., University of Minnesota, Twin Cities.
Legate, Julie Anne (2005): The Absence of Absolutive Case. In: J. Alderete, C. Han & A. Kochetov, eds., *Proceedings of the 24th WCCFL*. Cascadilla Press.
Legate, Julie Anne (2006): Split Absolutive. In: A. Johns, D. Massam & J. Ndayiragije, eds., *Ergativity*. Springer, pp. 143–171.
Levin, Juliette & Diane Massam (1985): Surface Ergativity: Case/Theta Relations Reexamined. In: S. Berman, ed., *Proceedings of NELS 15*. BLS, Amherst, Mass.
Lewis, David (1972): General Semantics. In: D. Davidson & G. Harman, eds., *Semantics of Natural Language*. Reidel, Dordrecht, pp. 169–218.
Mahajan, Anoop (1990): The A/A-bar Distinction and Movement Theory. PhD thesis, MIT, Cambridge, Mass.
Marantz, Alec (1984): *On the Nature of Grammatical Relations*. MIT Press, Cambridge, Mass.

Marantz, Alec (1991): Case and Licensing. In: G. Westphal, B. Ao & H.-R. Chae, eds., *Proceedings of the Eigth Eastern States Conference on Linguistics*. University of Maryland, pp. 234–253.
Marlett, Stephen (1986): Syntactic Levels and Multiattachment in Sierra Popoluca, *International Journal of American Linguistics* 52, 359–387.
Mohanan, Tara (1994): *Argument Structure in Hindi*. CSLI Publications, Stanford.
Müller, Gereon (1998): *Incomplete Category Fronting*. Kluwer, Dordrecht.
Müller, Gereon (2006): Global Impoverishment in Sierra Popoluca. In: G. Müller & J. Trommer, eds., *Subanalysis of Argument Encoding in Distributed Morphology*. Vol. 84 of *Linguistische Arbeitsberichte*, Universität Leipzig, pp. 23–42.
Murasugi, Kumiko (1992): Crossing and Nested Paths. PhD thesis, MIT, Cambridge, Mass.
Nash, Léa (1996): The Internal Ergative Subject Hypothesis. In: K. Kusumoto, ed., *Proceedings of NELS 26*. GLSA, Amherst, Mass, pp. 195–209.
Nichols, Johnanna (1986): Head-Marking and Dependent-Marking Grammar, *Language* 62, 56–119.
Pesetsky, David (1982): Paths and Categories. PhD thesis, MIT, Cambridge, Mass.
Pesetsky, David (1989): Language-Particular Processes and the Earliness Principle. Ms., MIT, Cambridge, Mass.
Pesetsky, David & Esther Torrego (2001): T-to-C Movement: Causes and Consequences. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Mass., pp. 355–426.
Pesetsky, David & Esther Torrego (2006): Probes, Goals and Syntactic Categories. Ms., MIT. Lingbuzz/000321.
Plank, Frans (1995): Ergativity. In: J. Jacobs, A. von Stechow, W. Sternefeld & T. Vennemann, eds., *Syntax. Ein internationales Handbuch zeitgenössischer Forschung*. Vol. 2, de Gruyter, Berlin, pp. 1184–1199.
Pollard, Carl J. & Ivan A. Sag (1994): *Head-Driven Phrase Structure Grammar*. University of Chicago Press, Chicago.
Prince, Alan & Paul Smolensky (1993): Optimality Theory. Constraint Interaction in Generative Grammar. Book ms., Rutgers University.
Ramchand, Gillian (2003): First Phase Syntax. Book ms., Oxford University.
Rezac, Milan (2003): The Fine Structure of Cyclic Agree, *Syntax* 6, 156–182.
Richards, Marc (2004): Object Shift and Scrambling in North and West Germanic: A Case Study in Symmetrical Syntax. PhD thesis, University of Cambridge, Cambridge, UK.
Richards, Marc (2007): Deriving the Edge: What's in a Phase?. Ms., Universität Leipzig.
Roberts, Ian & Anna Roussou (2002): The Extended Projection Principle as a Condition for the Tense-Dependency. In: P. Svenonius, ed., *Subjects, Expletives, and the EPP*. Benjamins, Amsterdam.
Schäfer, Florian (2007): On the Nature of Anticausative Morphology. PhD thesis, Universität Stuttgart.
Sigurðsson, Halldór (2002): To be an Oblique Subject: Russian vs. Icelandic, *Natural Language and Linguistic Theory* pp. 691–724.
Silverstein, Michael (1976): Hierarchy of Features and Ergativity. In: R. Dixon, ed., *Grammatical Categories in Australian Languages*. Australian Institute of Aboriginal Studies, Canberra, pp. 112–171.
Speas, Margaret (1990): *Phrase Structure in Natural Language*. Kluwer, Dordrecht.

Stabler, Edward (1996): Acquiring and Parsing Languages with Movement. Book ms., UCLA.

Sternefeld, Wolfgang (2006): *Syntax*. Stauffenburg, Tübingen. Two volumes.

Stiebels, Barbara (2000): Linker Inventories, Linking Splits and Lexical Economy. In: B. Stiebels & D. Wunderlich, eds., *Lexicon in Focus*. Akademie-Verlag, Berlin, pp. 211–245.

Stiebels, Barbara (2002): *Typologie des Argumentlinkings: Ökonomie und Expressivität*. Akademie Verlag, Berlin.

Svenonius, Peter (1994): C-Selection as Feature-Checking, *Studia Linguistica* 48, 133–155.

Trommer, Jochen (2003): Feature (Non-)Insertion in a Minimalist Approach to Spellout. In: *The Main Session. Papers from the 39th Meeting*. Vol. 1, Chicago Linguistic Society, Chicago. http://www.ling.uni-osnabrueck.de/trommer/papers.html.

Ura, Hiroyuki (2000): *Checking Theory and Grammatical Functions in Universal Grammar*. Oxford University Press, New York.

Ura, Hiroyuki (2006): A Parametric Syntax of Aspectually Conditioned Split-Ergativity. In: A. Johns, D. Massam & J. Ndayiragije, eds., *Ergativity*. Springer, pp. 111–141.

Williams, Edwin (1981): Argument Structure and Morphology, *The Linguistic Review* 1, 81–114.

Williams, Edwin (1994): *Thematic Structure in Syntax*. MIT Press, Cambridge, Mass.

Woolford, Ellen (1997): Four-Way Case Systems: Ergative, Nominative, Objective and Accusative, *Natural Language and Linguistic Theory* 15, 181–227.

Woolford, Ellen (2001): Case Patterns. In: G. Legendre, J. Grimshaw & S. Vikner, eds., *Optimality-Theoretic Syntax*. MIT Press, Cambridge, Mass., pp. 509–543.

Wunderlich, Dieter (1997): Cause and the Structure of Verbs, *Linguistic Inquiry* 27, 27–68.

Wunderlich, Dieter (2000): Optimal Case in Hindi. Ms., Universität Düsseldorf.