

## Lexical Case, Inherent Case, and Argument Structure<sup>1</sup>

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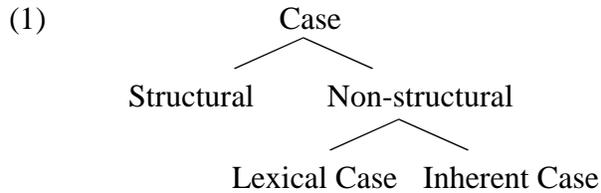
abstract:

*In addition to structural Case, Case Theory must distinguish two kinds of non-structural Case: lexical Case and inherent Case. Lexical Case is idiosyncratic Case, lexically selected and licensed by certain lexical heads (certain verbs and prepositions). Inherent Case is more regular and predictable: ergative Case is associated with agentive external arguments, and inherent dative Case is associated with DP goals. Lexical and Inherent Case turn out to be in complementary distribution: agentive external arguments and DP goals may have inherent Case, but not lexical Case; while themes/internal arguments may have lexical Case, but not inherent Case. This complementary distribution can be accounted for under recent views of vP structure which place both agents and DP goals outside the VP proper at the point at which non-structural Case is licensed. Claims in the literature that the more regular datives and ergatives are actually structural Cases are based on faulty or misleading diagnostic tests.*

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<sup>1</sup>I would like to express my appreciation to the following people for interesting discussion of these issues, helpful comments on previous drafts and assistance with the data: Rajesh Bhatt, Hubert Haider, Kyle Johnson, Jóhannes Gísli Jónsson, Shigeto Kawahara, Min-Joo Kim, Manfred Krifka, Beatrice Primus, and Peggy Speas.

The goal of this paper is to argue that, in addition to the standard division of Cases into structural and non-structural, the non-structural Cases further subdivide into two types which are appropriately labeled Lexical Case and Inherent Case.



Lexical Case is truly idiosyncratic Case, lexically selected by certain individual verbs and prepositions. Inherent Case is more predictable, inherently associated with certain  $\theta$ -roles/positions.

(2) Two Types of Non-structural Case

Lexical Case: Idiosyncratic, lexically selected Case

Inherent Case: Case inherently associated with certain  $\theta$ -roles/positions

Although lexical and inherent Cases behave alike, as non-structural Cases, on standard diagnostic tests (e.g. Case preservation under NP-Movement), there are nevertheless two important differences between these two types of non-structural Case.

The first difference involves regularity or predictability. It has often been noted (Zaenen, Maling, and Thráinsson 1985, Yip, Maling, and Jackendoff 1987, Czepluch 1988, Holmberg and Platzack 1995, Wunderlich 1997, Blume 1998, Butt and King 1998, Maling 2002, and Jónsson 2003) that some instances of non-structural Case are truly idiosyncratic and depend on particular verbs, as in the Icelandic examples in (3), while other instances of non-structural Case are quite predictable, such as the dative on ditransitive goals, as in the Icelandic example in (4) and the Basque example in (5), and the ergative on agentive/external arguments, as in the Basque example in (5):

- (3) a. *Bátnum hvolfdi.* [Icelandic]  
 boat-DAT capsized  
 ‘The boat capsized.’ (Levin and Simpson 1981 (1b))
- b. *Bátinn rak á land.*  
 the boat-ACC drifted to shore  
 ‘The boat drifted to the shore.’ (Jónsson 2003 (66a))
- c. *Jóns nýtur ekki lengur við.*  
 John-GEN enjoys not longer at  
 ‘John is no longer available’ (Jónsson 2003 (1c))

(4) Þeir gáfu konunginum ambáttina. [Icelandic]  
 they gave king-the-DAT slave-girl-the-ACC  
 ‘They gave king the slave-girl.’ (Maling 2002 (44a))

(5) Ni-k Jon-i liburu-a eman diezaioket. [Basque]  
 I-ERG John-DAT book-det(NOM) give aux+modal  
 I can give John the book. (Cheng and Demirdash 1990 (4))

The regularity of the dative on goals in German ditransitives is so reliable as to lead some scholars to argue that these regular datives must really structural Cases (Czepluch 1988, Wunderlich 1997, and Blume 1998). Although this conclusion is not supported by standard diagnostic tests for structural Case, it is nevertheless right to question the idea that idiosyncratic datives and predictable datives are licensed in the same way. The ergative Case has also been characterized as a structural Case (e.g. Uriagereka ms., Wunderlich 1997), but ergative never behaves like a structural Case on standard diagnostic tests (section 3) and the ergative fits the definition of a non-structural Case as a Case that is associated with a particular  $\theta$ -role/position, the agentive external argument (Mahajan 1989, Woolford 1993, Nash 1996, Woolford 1997 and additional references cited therein).

In addition to this difference in regularity/predictability between lexical and inherent Case, these two types of non-structural Case turn out to be in complementary distribution with respect to the  $\theta$ -roles/positions with which they are associated: lexical Case is associated with internal arguments while inherent Case is associated with arguments that are external to the VP proper at vP structure.<sup>2</sup>

(6) Complementary Distribution of Lexical and Inherent Case:

*Lexical Case may occur on themes/internal arguments, but not on agentive/external arguments nor on (shifted) DP goal arguments.*

*Inherent Case may occur on agentive/external arguments and on (shifted) DP goal arguments, but not on themes/internal arguments.*

What accounts for this complementary distribution? And why do DP goals pattern with agents/external arguments, instead of with themes/internal arguments in this respect? A rather natural account of this complementary distribution is possible if we take the view of vP structure in work such as Baker 1997, Marantz 1989, and McGinnis (1996, 1998, 2001) under which not

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<sup>2</sup>This generalization that lexical and inherent Case are in complementary distribution is new as stated here, but it encompasses several more restricted generalizations that are well-established in the literature, as we will see in section one. This paper is limited to a consideration of the Cases that mark DP arguments.

only agents, but also (shifted) DP goals occupy a position outside the VP proper.<sup>3</sup> If only themes are inside the VP proper, then only themes can be licensed for lexical Case by V. Agents and (shifted) DP goals are licensed for inherent Case by the higher little/light v-type heads above the VP proper at vP.<sup>4</sup>

(7) Lexical and Inherent Case Licensing at vP structure:

- a. *Lexical heads (e.g. V, P) license idiosyncratic lexical Case.*
- b. *Little/light v heads license inherent Case.*

Under this approach, both kinds of non-structural Case are licensed at vP structure (the vP phase), in contrast to structural Case which is licensed at IP structure (the IP phase).

This paper is organized as follows. Section one reviews the literature and evidence supporting the division of the non-structural Cases into two types which are in complementary distribution. The proposal for capturing this complementary distribution is presented in section two. Section three refutes various claims in the literature that predictable datives and/or ergative are really structural Cases. This section includes a discussion of the reliability of various diagnostic tests for distinguishing structural and non-structural Case, and points out certain interfering factors that can produce misleading results on such tests.

## 1. Lexical and Inherent Case in Complementary Distribution

There is evidence from a range of linguistic literature that, when added together, motivate the two new and apparently universal generalizations in (6), repeated below, which establish the complementary distribution of lexical and inherent Case:

(8) Complementary Distribution of Lexical and Inherent Case:

*Lexical Case may occur on themes/internal arguments, but not on agentive/external arguments nor on (shifted) DP goal arguments.*

*Inherent Case may occur on agentive/external arguments and on (shifted) DP goal arguments, but not on themes/internal arguments.*

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<sup>3</sup>These proposals in the literature differ in terms of whether or not the DP goal in ditransitives is base-generated outside the VP proper, or moved out of the VP proper, but they agree on what is crucial here, that Case is licensed to (shifted) DP goals in a position outside the VP proper.

<sup>4</sup>The actual labels of the light/little v-type heads in vP structure vary under different proposals in the literature.

Much support for the claim that agent arguments never take idiosyncratic lexical Case comes from the Icelandic and German literature. Although both languages have idiosyncratic Case, it has been noted that agents never take idiosyncratic Case in either language (Andrews 1982, Yip, Maling, and Jackendoff 1987, Sigurðsson 1989, Grimshaw 1990, Fanselow 2000, Jónsson 2003). This observation is sometimes stated in the stronger form that holds for German and Icelandic, that agents never take anything but structural Case. However, this stronger form of the generalization holds only for languages that lack ergative Case; it does not hold cross-linguistically since agents do take non-structural Case in some languages, in the form of inherent ergative Case. The generalization that agents never take idiosyncratic lexical Case appears to hold for ergative languages as well: agents either always take ergative Case, or they take ergative Case in some contexts (e.g. transitives and/or perfectives) and structural Case in other contexts. To my knowledge, no language marks only ergative Case idiosyncratically on the agents of just a few verbs.

With respect to ditransitive goals, it has been repeatedly observed in the Icelandic and German literature that goals do not take idiosyncratic lexical Case (Yip, Maling, and Jackendoff 1987, Czepluch 1988, Holmberg and Platzack 1995, Fanselow 2000, Jónsson 2003). It appears to hold universally that (shifted) DP goals take either inherent dative Case or structural Case, but never idiosyncratic lexical Case. It is important to note that this generalization does not extend to PP goals, which take whatever Case that particular P licenses in the language. We can see the contrast in Case on DP and PP goals in the following pair of Icelandic examples, where the goal takes inherent dative Case in the double object version in (a), whereas the goal inside the PP in the version in (b) gets genitive Case, because that is the Case that this particular preposition, *til* ‘to’, licenses.

- (9) a. Ég skilaði henni peningunum.  
 I returned her(dative) the money(dative) (Zaenen, Maling, and Thráinsson 1985 (42a))
- b. Ég skilaði peningunum til hennar.  
 I returned the money(dative) to her(genitive) (Zaenen, Maling, and Thráinsson 1985 (43a))

The claim that themes *can* take idiosyncratic lexical Case (in contrast to agents and DP goals) is well established in the literature. We see lexical Case on theme subjects in the Icelandic examples above in (3), and we see lexical Case on the theme object in the examples just above in (9) where the Icelandic verb for ‘returned’ licenses lexical dative Case on its theme argument.

Fanselow (2000) comes close to stating the part of the generalization about complementary distribution stated above when he concludes that in German, idiosyncratic Case is limited to the lowest, theme argument in ditransitive constructions. The other part of the generalization, that themes never get inherent Case, is new here, and may be surprising to some readers, given that Burzio (1986) popularized the idea that the theme object of all English ditransitive verbs takes inherent accusative Case. However, Burzio’s (1986) claim was not motivated by the behavior of

the theme object on any diagnostic tests for non-structural Case; instead, that claim was introduced to explain why the second object can receive accusative Case in the passive, when Burzio's Generalization predicts that passive verbs must lack the ability to license structural accusative Case. The claim that the second object in English ditransitives gets inherent accusative Case has no other support and it is problematic in many ways (see Baker 1988 and Woolford 1993). Moreover, in more recent work, Burzio (2000) reformulates his generalization so that it is no longer predicts that passive verbs lack the potential to license structural accusative Case.<sup>5</sup>

The claim here that there is no inherent Case associated with themes is based primarily on the absence (to my knowledge) of any language which marks all of its themes with accusative Case. In such a hypothetical language, all unaccusative subjects would take accusative Case, and the accusative Case on transitive objects would be preserved under NP movement.

If it is true that lexical Case is in complementary distribution with inherent Case with respect to the  $\theta$ -roles/positions these Cases may mark, we need an account of this fact. In the next section, one possible account is presented which builds on independently motivated proposals concerning the nature of vP structure.

## 2. Licensing Non-Structural Case at vP Structure

This section presents one possible account of how non-structural Case is licensed and why lexical and inherent Case are in complementary distribution. Under the proposed account, all Case licensing is technically structural in the sense that all Case licensing is done by heads in a local structural configuration. What we call structural Case would more accurately be called 'purely structural' Case, whereas what we call non-structural Case would more precisely be called 'not purely structural' Case. What distinguishes structural and non-structural Case under this account is very much like what distinguishes these Cases in earlier versions of Case Theory (e.g. Chomsky 1981, 1986), except that instead of licensing non-structural Case at D-structure, these Cases are licensed at vP structure (the vP phase). D-structure has been eliminated from the theory in Chomsky 2000, but the vP phase is the modern equivalent, in terms of an initial structure where  $\theta$ -roles are licensed. In other frameworks, this level goes by different names, and I will refer to this level here simply as vP structure, for convenience.

In the current literature, there are many different proposals as to exactly what vP structure looks like. However, the view that agents/external arguments are licensed in a little/light v projection above the VP proper is fairly well established (Hung 1988, Kratzer 1996, Chomsky 1995). The idea that this little/light v head licenses ergative Case, which I adopt here, is proposed in work such as Massam 2002 and Legate 2003, implementing the idea from Woolford 1997 that ergative Case is the inherent Case associated with agents. This proposal captures the

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<sup>5</sup>For a summary of much recent work on Burzio's Generalization, and a proposal to derive the reformulated generalization from markedness, see Woolford 2003a.

fact that the association between ergative Case and external arguments is regular and predictable, even though ergative is not a structural Case.

With respect to the treatment of (shifted) DP goals at vP structure, there is considerable variation in the literature. In order to capture the fact established above, that DP goals pattern with agents/external arguments and not with themes/internal arguments with respect to the kind of non-structural Case they get, we need a vP structure where DP goals are located outside the VP proper, at the point at which non-structural Case is licensed. Fortunately, there are a number of proposals with this crucial property in the current literature. I will discuss two specific proposals with this desired characteristic, one which assumes dative shift, and one which base-generates DP goals outside the VP proper.

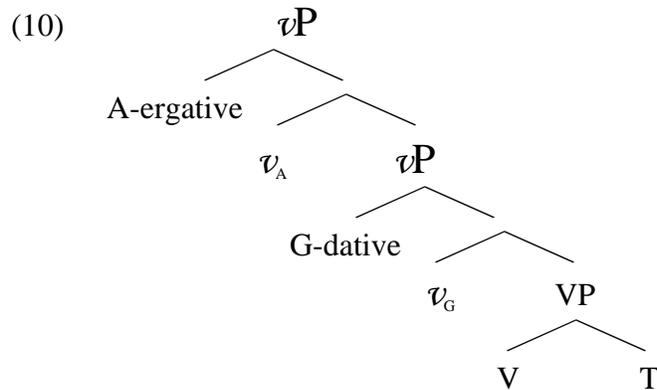
Baker (1997) argues that all goals are generated inside the VP proper, but that when no P is present to license Case on the goal, the goal moves out of the VP proper to the specifier of a head located above VP but below the little/light v that licenses agents. The DP goal gets its Case in this shifted position. For concreteness, Baker assumes that this position is the specifier of Aspect Phrase, following Travis (1991).

Developing work by Marantz (1989), McGinnis (1996, 1998, 2001) base-generates DP goals in the specifier of a head just above the VP proper. The result is a Case position for DP goals in vP structure that is very similar to that argued for by Baker. For McGinnis, the head of this projection is another little/light v.

Abstracting away from the question of whether or not dative shift occurs, what both of these proposals have in common is that DP goals receive their Case in the specifier position of a projection outside the VP proper, but within vP structure. I will assume that the head of this projection is another little/light v, following McGinnis, so that the vP structure that we need is that shown below in (10), where A stands for agent/external argument, G for DP goal, and T for theme/internal argument. The higher little/light v, labeled  $v_A$ , which licenses the agent/external argument also licenses inherent ergative Case to that argument. The lower little/light v, labeled  $v_G$ , which licenses the goal if there is no dative shift, also licenses inherent dative Case to that argument. The theme/internal argument is licensed by V in the VP proper.<sup>6</sup>

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<sup>6</sup>The exact position of the theme inside the VP is not crucial here. Baker (1997) argues that the theme occupies the specifier of VP, and that PP goals are complements of V.



Under this view of vP structure, the two types of non-structural Case are distinguished by the kind of head that licenses them. Idiosyncratic lexical Case is licensed only by lexical heads (e.g. individual verbs and prepositions), which makes sense given that lexical Case is licensed based on idiosyncratic lexical information. The more regular inherent Cases are licensed by little/light v heads in vP projections above the VP proper.

(11) Non-Structural Case Licensing

- a. Lexical Case is licensed only by lexical heads (e.g. V, P).
- b. Inherent Case is licensed by only by little/light v heads.

We now have an account of the observed complementary distribution of lexical and inherent Case. The reason that lexical Case is limited to themes/internal arguments is because only these arguments are in a position to be licensed by V in the structure in (10); the agent/external argument and DP goal argument are too high in the tree. Inherent Case is limited to arguments in the specifier positions of the little/light v heads that have the capability of licensing inherent Case.

This is the basic proposal for licensing the two types of non-structural Case and distinguishing them from each other.<sup>7</sup>

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<sup>7</sup>The question of how to formally capture the fact that some languages use ergative and/or dative Case and other languages do not is beyond the scope of this paper, but the answer consistent with current assumptions in the Minimalist Program (Chomsky 2000) would be that in some languages, one or both little/light v heads lack the capacity to license inherent Case. An alternative answer explored in Woolford 2001 is that heads have exactly the same capacity to license Case in all languages, but languages differ with respect to whether marked Cases such as ergative and dative are preserved at IP structure (the IP phase) or replaced with less marked structural Cases.

### 3. Diagnostics for Structural and Non-Structural Case

Because there has been some controversy in the literature as to whether ergative Case and the regular instances of the dative Case are really non-structural Cases, this section is devoted to a review of the kinds of evidence that have sometimes been interpreted to indicate that these Cases are actually structural Cases, and to a review and evaluation of the reliability of our diagnostic tests to distinguish structural from non-structural Case. We will see that once we realize that there is a regular type of non-structural Case, called inherent Case here, this removes much of the motivation for doubting that ergative and dative are non-structural Cases. We will also see that in general, our diagnostic tests provide no evidence that either ergative or dative is structural, but there are some interfering factors that can produce misleading results on such diagnostic tests.

#### 3.1 Regularity and Predictability

Much of the motivation for considering the dative of ditransitive goals to be a structural Case in work such as (Czepluch 1988, Wunderlich 1997, and Blume 1998) is the regularity and predictability of this Case. If one operates under the assumption that non-structural Cases must be idiosyncratic, then it is natural to conclude that any predictable Case is structural. But we can now see that the regularity and predictability of the inherent Cases is expected under the model presented in section two. Mere predictability is not a reliable diagnostic for structural Case.

#### 3.2 Theta Relatedness

One diagnostic for non-structural Case is theta-relatedness. If a Case is associated with a certain  $\theta$ -role, that Case is not a structural Case. In Basque, for example, ergative Case marks the agentive external argument:

(12) a. Makina hon-ek funtzionatu du.  
machine this-ERG function aux  
This machine has functioned. (Austin and López 1995 (38b))

b. Gizona-k kurritu du.  
man-ERG ran aux  
The man ran. (Levin 1989 (33))

Unaccusative verbs which do not take an agentive external argument do not have ergative subjects:

(13) Ni etorri naiz.  
I(NOM) come aux  
I came. (Levin 1989 (8))

Likewise, experiencer/goal subjects of verbs such as ‘like’ are not ergative in Basque:

- (14) Ni-ri zure oinetakoak gustatzen zaizkit.  
I-DAT your shoes-det(NOM) like aux  
I like your shoes. (Austin and Lopez 1995 (38a))

Interestingly, despite this association between ergative Case and agentive external arguments in Basque, there is a claim in the literature that ergative is a structural Case, based on the diagnostic of theta-relatedness. Under the assumption that non-structural Cases must correspond with particular thematic roles, Uriagereka ms. concludes that ergative Case must be a structural Case because it marks more than just agents in Basque; ergative also marks instrumental subjects:

- (15) Giltzak atea ireki zuen.  
key-ERG door(nom) opened aux  
The key opened the door. (Uriagereka ms (30b))

But under the model proposed above in section two, ergative Case marks the argument that occupies the external argument position at vP structure, and in languages such as English, this position can be occupied by arguments that once might characterize as having the fine-grained thematic roles of instrument or force, rather than agent per se.<sup>8</sup>

- (16) The key opened the door.

- (17) The storm destroyed the shed.

The same is apparently true of Basque, given that such arguments are marked with ergative Case.

The distinction between the external argument position and particular fine-grained thematic roles is brought home by the fact that languages can differ with respect to exactly which fine-grained thematic roles can be mapped to the external argument position. Irish and Japanese contrast with Basque and English in not allowing instruments as external arguments (Ritter and Rosen 2000):

- (18) a. D’oscail Seán an dorais.  
opened Seán the door  
Sean opened the door.
- b. \*D’oscail an eochair an dorais.  
opened the key the door  
The key opened the door. (Ritter and Rosen 2000 (58), from Watai 1996: 38)

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<sup>8</sup>Van Valin and Wilkins (1996) define a role called the *effector* which includes not only agents, but force and instrument subjects.

(19) a. Tom-ga doa-o aketa.  
 Tom-nom door-acc opened  
 Tom opened the door.

b. \*Kagi-ga doa-o aketa.  
 key-nom door-acc opened  
 The key opened the door. (Ritter and Rosen 2000 (59), from Watai 1996: 39)

A similar point concerning the difference between the external argument position and particular fine-grained thematic roles can be made with reference to the treatment of the subject of experiencer object constructions, as in the following example.

(20) Snakes scare him.

Although the subject in this construction is not strictly an agent, it is a cause or causer in some sense (e.g. Grimshaw 1990, Croft 1993, Pesetsky 1995, Pykkänen 2000, Barðdal 2001) and it has been argued in work such as Pesetsky 1995, Bouchard 1995 and Baker 1997 that it is an external argument. This conclusion is supported by the fact that these subjects are marked with ergative Case in languages such as Basque:

(21) Lanak nekatu nau.  
 work-the-ERG tired aux  
 The work tired me. (Laka and Uriagereka 1987 (14c))

(22) Mikelek ni haserretu izan.  
 Michael-ERG I(NOM) angry-perf aux  
 Michael angered me. (Manandise 1988:118)

The general point is that, since it is known that there are some cross-linguistic differences in what exact range of thematic roles is mapped to each position in vP structure, we should expect to see some difference in the range of arguments that take ergative (and dative) Case cross-linguistically. It is far beyond the scope of this paper to address this difficult mapping problem, but readers are referred to some of the vast literature on this problem, including Zubizarreta 1987, Baker 1988, Rappaport and Levin 1988, Pinker 1989, Grimshaw 1990, Jackendoff 1990, Dowty 1991, Van Valin 1991, Hale and Keyser 1993, Croft 1993, Zaenen 1993, Levin and Rappaport Hovav 1995, Pesetsky 1995, Bouchard 1995, Van Valin and Wilkins 1996, Baker 1997, Butt and Geuder 1998, Primus 1999, Krifka 1999, and Harley 2002. Helpful reviews and summaries of a number of these approaches can be found in Bouchard 1995 and Van Valin and Wilkins 1996.

### 3.3 Case Preservation Under A-Movement

A standard diagnostic test to distinguish structural from non-structural Case involves observing whether the Case of an argument changes when that argument moves to a different syntactic position by A-Movement such as raising and passive. If the Case of an argument changes to match the structural Case licensed in the syntactic position it occupies, that argument is said to have structural Case; if the Case of an argument remains the same regardless of its syntactic position, that argument is said to have non-structural Case (Case that is independent of surface syntactic structure).

This diagnostic test is based on the assumption that non-structural Case is *always* preserved regardless of the surface syntactic position of the argument. However, it turns out that this assumption breaks down in certain predictable contexts in certain languages. But before we get into the instances in which the diagnostic tests fail, let us first review the test results in Icelandic, a language where the movement diagnostic test works smoothly. In Icelandic it is clear that even the regular dative of DP goals is a non-structural Case, despite its regularity and predictability.

#### 3.3.1 Diagnostic Test Results In Icelandic

The standard syntactic diagnostic tests for structural Case show that no datives, not even the more predictable ones, are structural Cases in Icelandic (Zaenen and Maling 1984, Zaenen, Maling, and Thráinsson 1985, Jónsson 1996). When a dative occurs in, or moves, to a position where nominative Case is normally licensed, the dative is preserved. We see this in passive constructions, as in (23) and (24b):

(23) Mér var hjálpað.  
me-DAT was helped  
'I was helped' (Jónsson 1996:106)

(24)a. Þeir skiluðu Maríu bókinni.  
they returned Mary-DAT the book-DAT  
They returned to book to Mary. (Jónsson 1996:137)

b. Maríu var skilað þessari bók.  
Mary-DAT was returned this book-DAT (Jónsson 1996:139)

We also see this in active constructions with dative subjects which move to Spec IP:

(25) Bátnum hvolfdi.  
boat-DAT capsized  
'The boat capsized.' (Levin and Simpson 1981 (1b))

- (26) Barninu batnaði veikin.  
 child-DAT recovered-from disease-NOM  
 ‘The child recovered from the disease. (Yip, Maling, and Jackendoff 1987: 223)

This behavior of datives parallels that of clear instances of idiosyncratic lexical Cases such as genitive:

- (27) Foreldranna var saknað  
 the parents-GEN was missed  
 ‘The parents were missed.’ (Jónsson 1996:106)

Dative preservation under movement in Icelandic can also be seen in raising constructions, as in the examples in (29) and (30):

- (28) Hann virðist [ t elska hana ].  
 He-NOM seems [ t to-love her-ACC]  
 ‘He seems [ t to love her].’ (Andrews 1982: 437)

- (29) Barninu virðist [ t hafa batnað veikin ].  
 child-DAT seems [ t to-have recovered-from disease-NOM]  
 The child seems [ t to have recovered from the disease]. (Andrews 1982: 464)

- (30) Joni virðast [ t hafa verið gefnir þessir sokkar].  
 John-DAT seem to-have been given these socks-NOM  
 John seems to have been given these socks. (Jónsson 1996:175)

Another diagnostic test to distinguish structural and non-structural Case involves ECM constructions. In ECM constructions, the embedded subject normally receives structural accusative Case as in (31); but if that subject has a non-structural Case such as the dative, that Case is preserved, as we see in (32):

- (31) Ég hafði talið [Maríu vita svarið ].  
 I had believed [Mary-ACC to-know the answer-ACC] (Jónsson 1996: 166)

- (32) Hann hafði talið [ Jóni hafa verið gefnir þessir sokkar ].  
 he had believed John-DAT to-have been given these socks-NOM  
 (Jónsson 1996: 170)

With respect to Icelandic, there is no evidence from such diagnostic tests that dative is ever a structural Case. The only reason one might be tempted to claim that the more regular datives are structural Cases in Icelandic would be to capture that regularity and avoid lumping the regular datives with the idiosyncratic lexically selected datives. But this motivation disappears under the analysis presented above, which accounts for the greater regularity of the dative of goals and distinguishes these from the idiosyncratic datives, while maintaining the fact that both

sorts of datives are non-structural Cases.

### 3.3.2 Misleading Results on Diagnostic Tests in Special Contexts

Just as medical diagnostic tests sometimes yield false positive or false negative results, there are specific circumstances in which the A-Movement diagnostic test for structural Case will yield false results. The A-movement diagnostic test is based on the assumption that a non-structural Case will *always* be preserved under A-Movement, regardless of the syntactic context, but this assumption turns out to be false. There are certain syntactic contexts in certain languages in which one or more of the non-structural Cases are prohibited. In these contexts, dative and/or ergative Case are replaced with structural Case. An example of such a context is intransitive clauses.

#### 3.3.2.1 Non-Structural Cases Barred in Intransitives

One common syntactic context in which one or more of the non-structural Cases may be barred in a particular language is intransitives. This is well-known with respect to ergative Case, which is restricted to transitives in some languages such as Dyirbal (Dixon 1972) and Niuean (Seiter 1980), but what is less well-known is that the dative Case is also be restricted to transitives in some languages such as in Basque and Japanese. In Basque, datives may occur in transitive clauses as in (33), but dative can never mark the sole argument of an intransitive clause (Manandise 1988, Austin and Lopez 1995). An experiencer subject of an intransitive verb in Basque takes nominative Case instead of dative, as in (34).

(33) Ni-ri zure oinetakoak gustatzen zaizkit.  
I-DAT your shoes-det(NOM) like aux  
'I like your shoes. (Austin and Lopez 1995 (38a))

(34) Ni kezkatzen naiz.  
I(NOM) worry aux  
'I worry.' (Austin and Lopez 1995 (38b))

As a reviewer points out, if we look only at the pair of verbs shown in these Basque examples, we cannot be sure that the subjects really fall into the same semantic class. The key evidence is really that there are no intransitive verbs in Basque with dative subjects.

In Japanese, we see this intransitive restriction more directly when we compare transitive and intransitive examples involving the same verb. In Japanese, many verbs that do not normally take a dative subject do so if they are augmented by the addition of a morpheme meaning 'can'. The addition of this morpheme results in a dative subject in a transitive construction (defined as a construction with two arguments) as in (35a); but the dative is barred if the clause is intransitive, as in (35b). In the intransitive, the subject takes structural Case instead, as shown in

(35c) (Shibatani 1977).<sup>9</sup>

(35) a. Taroo-ni eigo-ga hanaseru.  
Taro-DAT English-NOM speak-can  
'Taro can speak English.' (Shibatani 1977:806)

b. \*Akatyan-ni moo arukeru.  
baby-DAT already walk-can  
'The baby can walk already.' (Shibatani 1977:807)

c. Akatyan-ga moo arukeru.  
baby-NOM already walk-can  
'The baby can walk already.' (Shibatani 1977:807)

In Japanese, this prohibition on datives in intransitives can produce a false result when passive is used as a diagnostic test for structural Case. One could easily draw the conclusion from the active passive pair below that dative in Japanese is structural because the dative on the goal disappears when the construction is passivized in (36b). (The by phrase in Japanese passives marked by the same *-ni* morpheme, but this is unrelated to the disappearance of the dative on the goal.)

(36) a. John-ga Mary-ni soodansita.  
John-NOM Mary-DAT consult-past  
'John consulted Mary.'

b. Mary-ga John-ni soodans-(r)are-ta.  
Mary-NOM John-DAT consult-pass-past  
'Mary was consulted by John.' (Kuno 1973:347)

But the reason the dative on the goal disappears in (36b) is simply because the construction is intransitive (the by phrase marked with *-ni* is an adjunct). When we control for this interfering factor by passivizing a ditransitive such as (37a), which produces a transitive, we see that the goal remains dative, as in (37b).<sup>10</sup>

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<sup>9</sup>The situation in Japanese is more complex than a simple intransitive transitive distinction, at least for some speakers. According to Shibatani 1977:807 and Dubinsky 1992, the ban on datives holds in matrix clauses in Japanese, but not in embedded clauses; and according to Kitagawa (personal communication), it holds in statements, but not in questions. However, Japanese speaking students that I have consulted do not manifest this complex pattern and speculate that it may be true of older speakers.

<sup>10</sup>I would like to thank Shigeto Kawahara for providing these Japanese examples.

(37) a. John-ga Mary-ni sono hon-o okutta.  
John-NOM Mary-DAT that book-ACC send-past  
'John sent Mary that book.'

b. Mary-ni sono hon-ga okur-are-ta.  
Mary-DAT that book-NOM sent-pass-past  
'Mary was sent that book.'

### 3.3.2 Two Passives in German

The standard passive of German behaves like the passive in Icelandic; datives are always preserved, indicating that they are not structural Cases (Haider 1985:68):

(38) a. Sie hilft ihm.  
She helps him-DAT

b. Ihm wird geholfen.  
She-DAT is helped.

(39) a. Sie liebt ihn.  
She loves him-ACC

b. Er wird geliebt.  
He-nom is loved.

However, there is a second passive or passive-like construction in German called the recipient passive (Rezipienten-Passiv) (also called the *kriegen* 'get' passive), which is something like the 'get' passive of English, and this construction gives a different result when used as a diagnostic test for structural Case. While the standard passive in (40a) preserves the dative, there is no dative in the recipient passive in (40b).

(40) a. ... daß ihm ein Buch geschenkt wurde  
that him-dat a book-nom presented was  
... that he was presented a book.

b. ... daß er ein Buch geschenkt kriegte  
that he-nom a book-acc presented got  
... that he got presented a book. (Haider 1985:98)

A good reason to think that it is the regular passive in German that is the reliable diagnostic for structural Case, and not the recipient passive, is that the so-called recipient passive has a convincing alternate analysis under which no Case change would be expected. Haider (1984, 1985) argues that the recipient passive differs from the standard passive in that the subject in

(40b) is an argument of the higher verb, *krieger*, rather than of the lower passive verb. The idea is that the recipient passive construction works something like the parallel English construction with ‘get’ or ‘have’ as the higher verb:

(41) Pat got/had [three papers accepted ].

In this English construction, we can tell that the subject ‘Pat’ is not an argument of ‘accept’ because of the ungrammaticality of what would be the source sentence:

(42) \*They accepted Pat three papers.

Scholars have pointed to the recipient passive as an additional argument to supplement what appeared to be independent evidence that the dative on ditransitive goals in German is a structural Case. Wunderlich 1997 concludes that the dative of goals must be a structural Case because of its regularity, and he points to the recipient passive to strengthen that argument. Czepluch 1988 concludes that the dative of goals in German is structural because it occurs on a different argument in ditransitive constructions than the truly idiosyncratic Cases; that is, the regular dative occurs on the first object in ditransitives whereas the irregular Cases are confined to the second object. He also points to the recipient passive to strengthen his position. Blume 1998 also argues that the dative of goals, even goals of single object verbs such as ‘help’ must be a structural Case because of its regularity. While these scholars are right to object to lumping the regular dative of goals with the truly idiosyncratic Cases, we can now capture the required distinction without resorting to the claim that the regular datives are structural: the very regular dative of goals is an inherent Case, licensed on G category arguments, whereas truly irregular lexically selected datives are lexical Cases limited to T category arguments.

We can thus see that while our standard diagnostic tests for structural Case work most of the time with respect to the dative, we must be aware of at least two kinds of situations in which they may fail. One involves special contexts in which non-structural Cases are barred in certain languages (e.g. intransitive constructions). The other involves constructions that look like ordinary passive or raising constructions, but are not.

### 3.4 Diagnostic Tests and the Ergative Case

It is more difficult to find diagnostic tests to determine whether or not the ergative Case is structural or non-structural. Since agents disappear in the passive (or are realized as adjuncts), we cannot use the standard passive test to see whether the ergative is preserved under A-Movement. Potentially, we could use raising constructions as a diagnostic test to see whether the ergative Case on a raised subject would be preserved, but many ergative languages lack raising constructions. None of the literature claiming that ergative is a structural Case has made use of the A-Movement test as evidence for this position (to my knowledge).

Another kind of diagnostic can easily be applied to ergative Case, but it depends on certain assumptions about Case Theory. If it is true (in ordinary matrix clauses) that all subjects must get

nominative Case unless they have some non-structural Case, then ergative is clearly a non-structural Case.

Another diagnostic test that places ergative in the non-structural category involves nominative objects. A clause can have a nominative object if the subject of that clause has non-structural Case, but not if the subject has structural Case. We see this contrast in Icelandic clauses embedded under ECM verbs: a structural accusative subject will not allow a nominative object, but a non-structural dative subject will:

(43) Ég hafði talið [Maríu vita svarið ].  
I had believed [Mary-ACC to-know the answer-ACC] (Jónsson 1996: 166)

(44) Hann hafði talið [Jóni hafa verið gefnir þessir sokkar ].  
he had believed John-DAT to-have been given these socks-NOM  
(Jónsson 1996: 170)

The fact that ergative subjects are compatible with nominative objects in many ergative languages is a strong indication that ergative is not a structural Case.

Of course, in testing ergatives, just as in testing datives, one must look out for the kind of interfering factors discussed in the last section that may produce false results on such diagnostic tests. For example, the fact that some languages bar ergative Case in intransitive clauses cannot be taken as an indication that ergative is a structural Case. In addition, nominative objects are sometimes barred with dative and/or ergative subjects because of Case locality restrictions in particular languages (see Woolford 2003b).

To conclude this section, we can say that no reliable diagnostic tests place ergative or dative Case in the category of structural Case. Instead, claims that these Cases are structural have been based on their relative regularity and predictability, and on the fact that ergative Case can mark more kinds of subject than just agents in some languages. But, we have seen in the sections above, both properties are expected if ergative and dative are inherent Cases.

#### 4. Conclusion

The relative regularity and predictability of ergative Case and many instances of the dative Case is problematic if these are analyzed in the same way as truly idiosyncratic Cases, and this has led to suggestions in the literature that these more regular Cases are actually structural Cases. We have seen in this paper that treating these as structural Cases is not justified. Instead, Case Theory must recognize that there are two types of non-structural Case, called here *lexical Case* and *inherent Case*. Lexical Case is idiosyncratic Case, which is lexically selected by particular verbs and licensed by V proper at vP structure. Inherent Case is the more regular and predictable type of non-structural Case, licensed to particular  $\theta$  roles/positions at vP structure by little v heads.

Ergative Case is the inherent Case licensed by the little *v* head that licenses the external argument (which proto-typically contains agents, but may also contain arguments with other thematic roles such as instrumental causers, depending on the language). Dative is the inherent Case that is licensed by the head that is associated with DP goals at *vP* structure (remaining neutral here as to whether DP goals are generated in or moved up from the VP proper to this position).

Two apparently universal generalizations capture the complementary distribution of lexical and inherent Case with respect to the  $\theta$ -roles/positions with which they are associated. Lexical Case is limited to the internal argument (theme, patient), while inherent Case never occurs on the internal argument, but is only associated with the two higher  $\theta$ -roles/positions, the external argument position and the DP goal position. This complementary distribution can be captured in terms of *vP* structure if both higher  $\theta$ -roles/positions are licensed by light/little *v* heads (following McGinnis 1996, 1998, 2001), in contrast to the internal argument which is licensed by *V* in the VP proper; this complementary distribution follows if only little/light *v* heads license inherent Case, while only a truly lexical head such as *V* (or *P*) can license lexically selected Case.

This paper has reviewed a range of diagnostic tests for structural Case, which confirm that despite the relative regularity and predictability of ergative and some datives, these are never structural Cases. However, there are several interfering factors that can produce misleading results on such diagnostic tests; these involve particular contexts such as intransitives or imperfective clauses where certain marked Cases are barred in some languages.

The proposal presented here preserves something similar to the idea from earlier work such as Chomsky 1981, 1986 that what distinguishes structural and non-structural Case is whether these are licensed at D-structure or S-structure. Here, the claim is that non-structural Case is licensed in association with  $\theta$ -role/positions at the *vP* phase, whereas structural Case is licensed at the IP phase.

## References

- Andrews, Avery. 1982. The representation of Case in Modern Icelandic. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan, 427-503. Cambridge, Mass.: MIT Press.
- Austin, Jennifer, and Luis López. 1995. Nominative, absolutive and dative languages. In *Proceedings of NELS 25*: 1-15. GLSA, University of Massachusetts, Amherst.
- Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Baker, Mark. 1997. Thematic roles and syntactic structure. In *Elements of Grammar*, ed. Liliane Haegeman, 73-137. Dordrecht: Kluwer Academic Publishers.
- Barðdal, Jóhanna. 2001. Case in Icelandic: a synchronic, diachronic and comparative approach. Lund, Sweden: Department of Scandinavian Languages, Lund University.
- Blume, Kerstin. 1998. A contrastive analysis of interaction verbs with dative complements. *Linguistics* 36: 253-280.
- Bouchard, Denis. 1995. *The semantics of syntax: a minimalist approach to grammar*. Chicago: University of Chicago Press.
- Burzio, Luigi. 1986. *Italian Syntax*. Dordrecht: Reidel.
- Burzio, Luigi. 2000. Anatomy of a Generalization. *Arguments and Case: Explaining Burzio's Generalization*, ed. Eric Reuland, 195-240. Amsterdam: John Benjamins.
- Butt, Miriam, and Wilhelm Geuder, eds. 1998. *The projection of arguments: Lexical and compositional factors*. Stanford, Calif.: CSLI Publications.
- Butt, Miriam, and Tracy Holloway King. 1998. Licensing semantic Case. Paper presented at the Workshop on the Effects of Morphological Case, Utrecht, August 1998.
- Cheng, Lisa and Hamida Demirdash. 1990. External arguments in Basque. *WCCFL* 9: 125-139.
- Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.
- Chomsky, Noam. 1986. *Knowledge of language*. New York: Praeger.
- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step*, ed. Roger Martin David Michaels, and Juan Uriagereka, 89-155. Cambridge, Mass.: MIT Press.
- Croft, William. 1993. Case marking and the semantics of mental verbs. In *Semantics and the lexicon*, ed. James Pustejovsky, 55-72. Dordrecht: Kluwer Academic Publishers.
- Czepluch, Hartmut. 1988. Case patterns in German: Some implications for the theory of abstract Case. *McGill Working Papers in Linguistics, Special Issue on Comparative Germanic Syntax*, 79-122. Department of Linguistics, McGill University, Montreal, Canada.
- Dixon, R. M. W. 1972. *The Dyirbal language of North Queensland*. Cambridge: Cambridge University Press.
- Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67: 547-619.
- Dubinsky, Stanley. 1992. Case assignment to VP-adjoined positions: Nominative objects in Japanese. *Linguistics* 30:873-910.
- Fanselow, Gisbert. 2000. Optimal exceptions. In *The Lexicon in Focus*, ed. Barbara Stiebels and Dieter Wunderlich, 173-209. Berlin: Akademie Verlag.
- Grimshaw, Jane. 1990. *Argument structure*. Cambridge, Mass.: MIT Press.

- Haider, Hubert. 1984. Mona Lisa lächelt stumm - Über das sogenannte deutsche 'Rezipientenpassiv'. *Linguistische Berichte* 89:32-42.
- Haider, Hubert. 1985. The Case of German. In *Studies in German Grammar*, ed. Jindřich Toman, 65-101. Dordrecht: Foris.
- Hale, Kenneth, and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from building 20: Essays in linguistics in honor of Sylvain Bromberger*, eds. Kenneth Hale and Samuel Jay Keyser, 53-109. Cambridge, Mass.: MIT Press.
- Harley, Heidi. 2002. Possession and the double object construction. *Linguistic Variation Yearbook* 2: 29-68.
- Holmberg, Anders, and Christer Platzack. 1995. *The role of inflection in Scandinavian syntax*. Oxford: Oxford University Press.
- Hung, Henrietta. 1988. Derived verbs and nominals in Malagasy. Ms., McGill University, Montreal, Canada.
- Jackendoff, Ray. 1990. *Semantic structures*. Cambridge, Mass.: MIT Press.
- Jónsson, Jóhannes Gísli. 1996. *Clausal architecture and case in Icelandic*. Doctoral dissertation, University of Massachusetts, Amherst.
- Jónsson, Jóhannes Gísli. 2003. Not so quirky: On subject Case in Icelandic. In *New Perspectives on Case Theory*, ed. Ellen Brandner and Heike Zinsmeister. Stanford, California: CSLI Publications.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase Structure and the Lexicon*, eds. Johan Rooryck and Laurie Zaring, 109-137. Dordrecht: Kluwer Academic Publishers.
- Krifka, Manfred. 1999. Manner in dative alternation. *WCCFL* 18: 260-271.
- Kuno, Susumu. 1973. *The structure of the Japanese language*. Cambridge, Mass.: MIT Press.
- Laka, Itziar, and Juan Uriagereka. 1987. Barriers For Basque and Vice-Versa. *NELS* 17: 394-408.
- Legate, Julie. 2003. Split ergativity in Warlpiri. Ms. Harvard University, Cambridge, MA.
- Levin, Beth. 1989. The Basque verbal inventory and configurationality. In *Configurationality: The typology of asymmetries*, eds. László Marác and Pieter Muysken, 39-62. Dordrecht: Foris.
- Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge, Mass.: MIT Press.
- Levin, Lori and Jane Simpson. 1981. Quirky Case and lexical representations of Icelandic verbs. *Papers from the Seventeenth Regional Meeting, Chicago Linguistics Society*, 185-196. Chicago Linguistics Society, University of Chicago, Chicago, Ill.
- Mahajan, Anoop. 1989. Agreement and agreement phrases. *MITWPL* 10: 217-252.
- Maling, Joan 2001. Dative: the heterogeneity of the mapping among morphological case, grammatical functions, and thematic roles. *Lingua* 111: 419-464.
- Maling, Joan. 2002. Verbs with dative objects in Icelandic. *Íslenskt mál* 24: 31-105.
- Manandise, Esméralda. 1988. *Evidence from Basque for a New theory of grammar*. New York: Garland.
- Marantz, Alec. 1989. Relations and configurations in Georgian. Ms. University of North Carolina.

- Massam, Diane. 2002. Fully Internal Cases: Surface Ergativity can be profound. *AFLA* 8. MITWPL 44:185-196.
- McGinnis, Martha. 1996. Projection and position. In *Proceedings of ConSole IV*, ed. João Costa, Rob Goedemans, and Reuben van der Vijver, 203-220. Leiden: HIL.
- McGinnis, Martha. 1998. Case and locality in L-Syntax: Evidence from Georgian. MITWPL 32:139-158.
- McGinnis, Martha. 2001. Semantic and morphological restrictions in experiencer predicates. In *Proceedings of the 2000 CLA Annual Conference*, ed. John T. Jensen and Gerard van Herk, 245-256. Cahiers Linguistiques d'Ottawa, Department of Linguistics, University of Ottawa.
- Nash, Léa. 1996. The internal ergative subject hypothesis. *NELS* 26: 195-209.
- Pesetsky, David. 1995. *Zero Syntax*. Cambridge, MA: MIT Press.
- Pinker, Steven. 1989. *Learnability and cognition: the acquisition of argument structure*. Cambridge, MA: MIT Press.
- Primus, Beatrice. 1999. *Case and thematic roles: Ergative, accusative, active*. Tübingen: Max Niemeyer.
- Pylkkänen, Liina. 2000. On stativity and causation. In *Events as Grammatical Objects: the converging perspectives of lexical semantics and syntax*, eds. Carol Tenny and James Pustejovsky, 417-422. Stanford: CSLI Publications.
- Rappaport, Malka, and Beth Levin. 1988. What to do with theta roles. In *Syntax and semantics 21: Thematic relations*, ed. Wendy Wilkins, 7-37. New York: Academic Press.
- Ritter, Elizabeth and Sara Rosen. 2000. Event structure and ergativity. In *Events as grammatical objects: the converging perspectives of lexical semantics and syntax*. Stanford: CSLI Publications.
- Seiter, William. 1980. *Studies in Niuean syntax*. New York: Garland.
- Shibatani, Masayoshi. 1977. Grammatical relations and surface Cases. *Language* 53:789-807.
- Sigurðsson, Halldór. 1989. *Verbal syntax and Case in Icelandic*. Reykjavík: University of Lund.
- Travis, Lisa. 1991. Inner Aspect and the Structure of VP. Paper presented at NELS 22, Delaware. (Published as Travis 1992.)
- Travis, Lisa. 1992. Inner Aspect and the Structure of VP. *Cahiers de Linguistique de L'UQAM* 1: 130-145.
- Uriagereka, Juan. Ms. Government restrictions and Basque movement. University of Maryland.
- Uriagereka, Juan. 1999. Minimal restrictions on Basque movements. *Natural Language and Linguistic Theory* 17: 403-444.
- Van Valin, Robert D. Jr. 1991. Another look at Icelandic Case marking and grammatical relations. *Natural Language and Linguistic Theory* 9:145-194.
- Van Valin, Robert D. Jr. and David P. Wilkins. 1996. The case for 'effector': case roles, agents and agency revisited. In *Grammatical constructions: their form and meaning*, ed. Masayoshi Shibatani and Sandra Thompson, 289-322. Oxford: Clarendon Press.
- Watai, Fumiko. 1996. Two subject positions and a functional category predicate. MA Thesis, University of Calgary, Calgary, Alberta.
- Woolford, Ellen. 1993. Symmetric and asymmetric passives. *Natural Language and Linguistic Theory* 11:679-728.

- 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 *Optimality theoretic syntax*, ed. Géraldine Legendre, Sten Vikner, and Jane Grimshaw, 509-543. Cambridge, Mass.: MIT Press.
- Woolford, Ellen 2003a. Burzio's generalization, markedness, and constraints on nominative objects. In *New Perspectives on Case Theory*, ed. E. Brandner and H. Zinsmeister. Stanford: CSLI.
- Woolford, Ellen 2003b. Nominative Objects and Case Locality. *Formal Approaches to Slavic Linguistics 11*, eds. W. Browne, et al. Ann Arbor, Michigan: Michigan Slavic Publications.
- Wunderlich, Dieter. 1997. Cause and the structure of verbs. *Linguistic Inquiry* 28:27-68.
- Yip, Moira, Joan Maling, and Ray Jackendoff. 1987. Case in tiers. *Language* 63:217-250.
- Zaenen, Annie. 1993. Unaccusativity in Dutch: Integrating syntax and lexical semantics. In *Semantics and the Lexicon*, ed. James Pustejovsky, 129-161. Dordrecht: Kluwer Academic Publishers.
- Zaenen, Annie and Joan Maling. 1984. Unaccusative, passive, and quirky Case. In *Proceedings of the Third West Coast Conference on Formal Linguistics*, 317-329. Stanford Calif.: CSLI Publications.
- Zaenen, Annie, Joan Maling, and H. Thráinsson. 1985. Case and grammatical functions: The Icelandic passive. *Natural Language and Linguistic Theory* 3:441-483.
- Zubizarreta, Maria Luisa. 1987. *Levels of representation in the lexicon and in syntax*. Dordrecht: Foris.

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