

**FEATURES
AND
SELECTION IN LFG:
THE ENGLISH VP**

John Payne and Kersti Börjars

The University of Manchester

Proceedings of the LFG15 Conference

Miriam Butt and Tracy Holloway King (Editors)

2015

CSLI Publications

<http://csli-publications.stanford.edu/>

Abstract

The kinds of analysis that can be provided for selection and agreement phenomena depend significantly on the choices made about the underlying features. In this paper, we review the features that have been used in LFG for the analysis of English verb forms, and propose a motivated alternative which has the consequence that all selection and agreement can be handled through unification.*

1 Introduction

Selection (aka form-government) and agreement are generally construed as being distinct linguistic phenomena. For example, in a well-documented typological survey of the phenomena which might be considered as agreement, Lehmann (1982: 205) argues that these should be “strictly distinguished” from phenomena involving selection, which he claims “arises from government”. For Lehmann, selection involves a syntagmatic relation of subordination, where one element (the governor) inherently determines the syntactic function which the subordinate element has in the construction, and hence its correct morphological form.

The forms of the English verb appear to be paradigm illustrations of the intended distinction. First of all, we have one set of forms which have the potential to occur in a subordinate relation to a governor. The governor then determines both their syntactic function and their morphological form. We illustrate here with lexical verbs, but in what follows we will also consider auxiliaries.¹

- | | | |
|--------|--------------------------------------|---------------------|
| (1) a. | helped [arrest the thieves] | [infinitive] |
| b. | kept [arresting the thieves] | [gerund-participle] |
| c. | got [arrested] | [past participle] |

Here *helped*, *kept* and *got* are governors which require a complement of a particular type, and the head of the complement assumes a particular morphological form. One canonical characteristic of selection is that the form of the subordinate verb does not co-vary with the form of the governing verb. In (1a), for instance, the verb *arrest* takes the infinitive form independently of

* We are grateful for discussion with participants in the Workshop on Morphology held in conjunction with LFG2015 and for comments received from one anonymous reviewer and the two editors of this volume.

¹ The terms we employ for the English verb forms are those of Huddleston (2002a).

the form required for *help*. Cann (1982: 44) indeed makes this property the defining characteristic of selection (which he calls “form-government”). Under both Lehmann’s and Cann’s conceptions, selection is inherently unidirectional in that one element selects and the other is selected. The selected element does not influence the selector.

Secondly, there is a set of finite forms which have the potential to occur as the predicate of a main clause, that is, in an unsubordinated environment:

- | | | | |
|-----|----|-----------------------------|------------------|
| (2) | a. | arrested the thieves | [past] |
| | b. | arrests the thieves | [3S present] |
| | c. | arrest the thieves | [plain present] |

While the past form is invariant, the present forms, plain *arrest* and third-person singular *arrests*, co-vary with forms of the subject. While they differ in some respects, this covariance property is inherent both to Lehmann’s (1982: 203) definition of agreement, and to Cann’s (1982: 44). See also Steele (1978: 610).

What is not immediately obvious, however, is whether agreement should or should not be considered a unidirectional relation. Probably the majority view falls on the side of unidirectionality. Lehmann (1982: 228), for example, talks of the “source” of agreement, which in the case of subject-verb agreement in English would be the subject NP. For Lehmann’s definition of agreement to be satisfied, the subject NP must belong to a person and number category independently of whether there is an agreeing form or not. Cann (1982) talks of “concord controllers” in a similar spirit, and the notion of controllers and targets of agreement is inherent to Corbett’s (2006) typology of agreement.

Nevertheless, the issue is not clear-cut. First of all, examples abound in which the supposed targets of agreement are marked with the appropriate agreement categories independently of there being a syntactically overt source for them. This is obviously the case in pro-drop languages, where the subject is not overtly present. Ways can be proposed to circumvent this issue, essentially by proposing a covert source. More interesting though are cases where the subject is syntactically present, but does not belong to one or more of the agreement categories in question. One of the earliest examples is provided by Moravcsik (1978: 351):

- | | | | | |
|-----|------------------------------|-----|------------|-----------|
| (3) | Nadie | lo | vimos | [Spanish] |
| | nobody | him | see.PRT.1P | |
| | ‘Nobody of us has seen him.’ | | | |

Here the subject NP is clearly not syntactically distinguishable as 1st person, and treating the subject as the source of the person marking would be contrived. Rather, the fact that the subject must be construed as 1st person emerges from the verbal marking. In such cases, what seems to be required is that the forms in the supposed agreement relation are not incompatible with each other, rather than that one of them exclusively acts as the source (see Lehmann 1982: 218-9).

In this paper, we consider the formal mechanisms required to handle both the selection and agreement of English verb forms. One fundamental issue is whether the unidirectionality (or the lack of it) of these relations can be handled by the formalisms in question. A related issue is whether the formalisms need to reflect any unidirectionality which actually obtains. Our impression is that the decisions which have been taken on these points arise first from theoretical considerations internal to the theory involved, and secondly from assumptions concerning the features involved. They tend not to arise from a full perspective on the phenomena involved.

For example, in the Minimalist Program (Chomsky 1995, 1998), a crucial initial distinction is made between interpretable features (those which must survive a derivation and form part of logical form) and uninterpretable features (those which have no semantic content and must therefore be eliminated during the course of the derivation). To this is added the theoretical decision to invoke a mechanism of “checking” that removes uninterpretable features in certain structural configurations (e.g. specifier-head). Since the features which are involved in subject-verb agreement in English (person and number) are deemed to be interpretable and inherent to the subject, the verb must bear identical uninterpretable versions of the same features which are checked during the derivation and eliminated. In other words, the formalisation of person and number agreement is inherently unidirectional because of the *a priori* decision to distinguish between interpretable and uninterpretable features. This is captured in the terminology associated with feature checking, which treats the verb as the “probe” and the subject as the “goal”, i.e. the verb needs to find something to agree with. It is however difficult to reconcile this formalisation with examples such as (3), where the verb alone is the apparent source of the person feature.

On the other hand, in the Minimalist Program a verb and its complement in a selection relationship both bear uninterpretable versions of the relevant feature (e.g. case for NPs, verb-form for VPs). Both features in the feature-checking pair must be eliminated by checking, and selection is therefore essentially formalised without unidirectionality. At first sight, this formalisation appears not to reflect the notional unidirectionality of the selection relation. However, it is not incompatible with it. Essentially, whatever feature is required by a governed constituent can with impunity also be assigned to the governor, and then eliminated.

In this paper, we review the treatment of the selection and agreement of English verb-forms in LFG. In LFG the underlying principle which ensures compatibility of features is functional uniqueness: a feature can have only one value. This principle does not in itself force a unidirectional treatment either of selection or of agreement: all that it requires is compatibility of the features involved, and not necessarily their identity. Examples such as (3) indeed suggest that a formalisation which eschews unidirectionality, i.e. a unificational approach, might be an essential component of any successful approach to subject-verb agreement (even if not of selection). One of the themes we will pursue is

whether the generalisations we wish to capture in the English data in fact point to unification as a solution for selection as well.

2 Selection

2.1 Falk (2001)

Merely as an illustration of an apparently innocuous set of decisions concerning English verbal features within LFG, let us first consider the approach in Falk (2001: 85). A summary of the features and their respective values is given in (4).

(4)

FORM	FEATURE	VALUE
helps	TENSE	pres
helped	TENSE	past
helping	VFORM PART	pres
helped	VFORM PART	past
help	nothing	

This feature set however raises immediate issues.

Firstly, no feature distinction is made between the finite present form *help* and the infinitive form *help*, while finite past form *helped* is distinguished from past participle *helped*. Whether this might be justifiable depends on the extent the English verbal paradigm can be considered syncretic. The first criterion which is invoked in general discussions of syncretism is whether there are other items which show the relevant distinction. In the case of *helped* (past) and *helped* (past participle), there are a fair number of irregular verbs with distinct past and past participle forms, e.g. *fell* (past) vs. *fallen* (past participle). On this basis, it seems clear that *helped* should be considered syncretic between past and past participle. For these irregular verbs, the distinction is clearly needed for the purpose of selection. For example, we need perfect *have* to select the past participle *fallen* rather than the past *fell*. In the case of infinitive *help* and present non-3SG *help*, only the verb *be* manifests the distinction, with present *am* (1SG)/*are* and infinitive *be*. However, this distinction is also crucial to selection: we need the modal verb *must* to select the infinitive *be* rather than any of the present forms.

In essence, the feature set in (4) treats the additional forms of *be* as cases of “overspecification” (for this term see Baerman 2005, Brown and Hippisley 2012). However, there is a clear difference between the mechanisms

which are needed for the selection of the correct forms of *be* and the mechanisms which are postulated to handle canonical examples of overspecification such as the additional prepositional case forms of a handful of Russian nouns. In Russian, the existence of these nouns forces a single prepositional case feature to be differentiated into two, such that the special additional form is selected by one set of prepositions (e.g. *na* ‘on’ and *v* ‘in’) while the regular form is selected by the other (e.g. *o* ‘about’). To handle this situation, Brown & Hipsisley (2012) invoke a mechanism of default inheritance. That is, there is a feature hierarchy in which a single feature PREP is divided into PREP1 (regular) and PREP2 (additional). Standard nouns which do not make the distinction between PREP1 and PREP2 then simply inherit by default the form appropriate to the undivided PREP feature. Given the feature set in (4), however, a mechanism such as default inheritance could not ensure the selection of the infinitive form of regular verbs such as *help*. This is because there is no feature which the infinitive and the present (non-3S) share to the exclusion of other forms.

Secondly, the choice of a feature set such as (4) entails the use of mechanisms such as constraining equations to handle selection. The appropriateness of constraining equations is clearly stated by Kaplan and Bresnan (1995 [1982]: 63):

‘A constraining equation is appropriate if, (...), an unspecified value is intended to be in conflict with all of a feature’s real values. On the other hand, a value specification may be omitted for some features as an indication of vagueness and the restriction is then naturally stated in terms of a defining equation.’

For example, a defining equation such as (5) will correctly ensure that the gerund-participle form of *hand* is selected by progressive *be* in (6a), and rule out the selection of the past participle *handed* as in (6b):

(5) *be*: (\uparrow VCOMP PART)= *pres*

- (6) a.. The girl is handing the baby a toy.
 b. *The girl is handed the baby a toy.

This is because *handed* can be assigned PART=*past* via the equation (\uparrow VCOMP PART)= *past* associated with the verb *be*. However, under Falk’s analysis (5) does not rule out (7a), because *hands* has been assigned no value for the feature PART, or (7b), because *hand* has no features at all.

- (7) a. *The girl is hands the baby a toy.
 b. *The girl is hand the baby a toy.

Changing (5) to the constraining equation (8) solves this issue.

(8) *be*: (\uparrow VCOMP PART) = *c pres*

Now only (6a) is indeed permitted.²

The introduction of constraining equations such as (8) brings an essentially unidirectional mechanism into play, since the item which bears the constraining equation determines the form of its dependent rather than vice versa. No descriptive difficulties arise from this as far as the selection of English verb forms is concerned. From a mathematical perspective, however, there is a potential cost. In an attempt to formalize the LFG construction algorithm declaratively, Blackburn and Gardent (1995: 44) note that constraining equations, which effectively test between a multiplicity of already generated representations, constitute “a dynamic residue that resists a purely declarative analysis”. See also Hancox (1994, 2003) and Börjars and Payne (2013). The fact that constraining equations are necessary appears to follow directly from the initial choices that are made concerning features, rather than from any inherent necessity in the theory.

2.2 *An alternative*

In this section we propose an alternative set of features for English verb forms which is intended in the first instance to capture what we believe to be genuine generalisations, but also has the consequence that essentially unidirectional mechanisms such as constraining equations prove to be unnecessary.

The proposed alternative is given in (9), PERS is not included here, we will return to a discussion of this feature in Section 3:

FORM	FEATURE	VALUE
helps	VFORM	<i>fin</i>
	TENSE	<i>prs</i>
	NUM	<i>sg</i>
help	VFORM	<i>fin</i>
	TENSE	<i>prs</i>
	NUM	<i>nonsg</i>

² Although the feature set used is different for non-finite forms, the Pargram starter grammar for English employs a similar VFORM feature. See: <http://www2.parc.com/isl/groups/nlitt/xle/doc/PargramStarterGrammar/eng-pargram-lex.lfg>. One essential difference between this and the proposal made here is that the Pargram grammar uses constraining equations in its CHECK algorithms for selection by English auxiliaries. A second is that auxiliaries do not head their own clauses (see below).

Some	helped	VFORM TENSE	<i>fin</i> <i>pst</i>
	helping	VFORM	<i>ger-part</i>
	helped	VFORM	<i>pst-prt</i>
	help	VFORM	<i>infin</i>

aspects of (9) are immediately apparent, notably the fact that present and infinitive forms are not treated as syncretic, and that all verb forms, not just participles, should have a VFORM feature. The decision not to treat present and infinitive forms as syncretic is justified by the behavior of *be*, and the decision to allocate the VFORM feature to all forms removes an obvious anomaly.

These two decisions immediately remove any necessity to use constraining equations for the purposes of selection. To be specific, the defining equation in (10) will correctly permit (11a) and disallow (11b-d).

(10) *be*: (\uparrow XCOMP VFORM)= *ger-prt*

- (11) a.. The girl is handing the baby a toy.
 b. *The girl is handed the baby a toy.
 c. *The girl is hands the baby a toy.
 d. *The girl is hand the baby a toy.

The form *handed* has either the value *fin* or *pst-prt* for VFORM, and the form *hands* has either *fin* or *infin*.

A further characteristic worth noting is that there is a class of finite forms. This can be justified by the fact that finite forms essentially have the same distribution. For example, they require nominative subjects and may enter into agreement relations with their subjects. The presence of a finite verb form also plays a role in selection by main verbs. For example, the verb *think* requires a finite verb form to head its complement in (12b), and this is captured by the defining equation in (12b).

(12) *think*: (\uparrow COMP VFORM)= *fin*

- (13) a. I think [_{IP} this is a good start].
 b. I think [_{IP} this was a good start].

Note that the subordinate clause in (13) is an IP, and that the choice of verb form cannot be made contingent on the presence of a complementizer.

What is not the case in (9) is that there is claimed to be a class of non-finite forms. This is justified by the fact that, unlike the finite forms, the participles and the infinitive form do not have similar distributions and are selected distinctively by different verbs. Falk (2001) suggests that a

generalization linking the participles might be their ability to occur as pre-head adjuncts in noun-phrase structure, as in (14).

- (14) a. the winning team [gerund-participle]
b. the defeated army [passive past participle]

However, this apparent generalization does not survive close scrutiny. Firstly, it is not the case that exclusively the participles can function as nominal adjuncts. As can be seen in (15a), infinitives also occur in this environment:

- (15) a. the soon to be released prisoners [infinitive]
b. ??the to be released prisoners

Of course, the occurrence of infinitives in this function is severely constrained: the infinitive has to be modified by an adverb such as *soon* (compare 15b). However, this property does not distinguish the infinitive as pre-head modifier from all participles. As shown in (16), a similar constraint applies in the case of active past participles (but involving a different set of adverbs).

- (16) a. the newly arrived guests [active past participle]
b. ??the arrived guests

These complexities suggest that there is in reality no overall generalisation concerning the use of verb forms as pre-head modifiers. Each of the non-finite forms has its own restrictions and peculiarities.

To conclude this section, we note that our treatment of selection implies that auxiliary verbs in English select their complements in a similar way to main verbs. In other words, we adopt an “auxiliaries as main verbs” analysis (Pullum and Wilson 1977, see also Dyvik 1999) rather than a Pargram-style approach in which auxiliary-plus-verb constructions are treated as monoclausal. This has the cost that English auxiliary-plus-verb constructions cannot be treated in a parallel manner to those of languages such as French (as in Butt et al. 1999). However, there is a body of independent evidence in English that auxiliaries do indeed head their own clauses. These include the ability of the auxiliary and complement to have their own independent temporal specification and negation (for a synopsis see Huddleston 2002b: 1209ff). As an illustration of the independent negation property, even with an auxiliary such as dummy *do*, see (17):

- (17) I didn't not phone you [Sliding Doors, 1998]

This example, spoken by the hero in a well-known film, is clearly intended not simply to communicate that the phone call was actually made. The subordinate negation in this case seems like antonymic rather than classical negation: i.e. from the negation of “not phoning” we are not allowed to conclude “phoned”.

See Hamm and Lambalgen (2005, citing E. Engdahl as source) for an example of antonymic negation of the complement of a perception verb, i.e. a main verb:

(18) The policeman saw Andrew not stop at the lights

This analysis also implies that a semantic account must be provided of restrictions on auxiliary order (for a review of how this might be done see Falk 1984).

3 Agreement

3.1 Existing accounts

Existing accounts of subject-verb agreement in English all assume in some form a basic distinction of singular versus plural for number, and 1 vs. 2 vs. 3 for person. For the verb *be*, and all other verbs including main verbs, this results in the present tense paradigms in (19):

(19)

FORM	PERS	NUM
help am	1	sg
help are	2	sg
helps is	3	sg
help are	1	pl
help are	2	pl
help are	3	pl

The main issue then becomes how to deal with the apparent syncretism of the non-3SG forms of main verbs like *help*.

If the form *helps* is taken as representing [PERS 3, NUM *sg*], and the form *help* is unspecified for person and number, as in (4), then we are forced into the use of constraining equations for subject-verb agreement. See Bresnan (2001: 60) for such an approach. Essentially, the subject-verb agreement rule will have to be as in (20). Some form of morphological blocking will be assumed to favour the more specific form and hence rule out *help* occurring with a third person singular subject.

(20) *helps*: (↑SUBJ PERS) = c 3
 (↑SUBJ NUM) = c *sg*

This rule is unidirectional in nature, and treats the subject as the source of agreement. That however a unificational approach to subject-verb agreement might be preferable can be seen from examples such as (21):

- (21) a. What has/have pointed heads and long tails?
b. The sheep has/have not been counted.

For further examples of this kind, see Payne and Huddleston (2002). In these examples, it appears reasonable to treat the subject as unspecified for NUM, and to treat its singularity or plurality as inherited from the verb. These are the analogues of the Spanish example in (3), though with respect to number rather than person.

A unificational approach is of course entirely possible if all present tense forms of English verbs (and not just *be*) are assigned values for the person and number features. However, this is a blunt approach to the syncretisms involved. In sections 3.2 and 3.3 we provide a novel alternative account involving a re-evaluation of person and number features.

3.2 *An alternative: the nature of NUM*

In our approach, the basic lexical entry for nouns will contain a NUM distinction between *sg* and *nonsg*. Person will not be treated as inherent to nouns, and they will not contain a PERS feature (for motivation of this assumption, see for example Lehmann 1982). This will have the immediate consequence that standard nouns can unify with the first and second person determiners, as in (22).

- (22) a. we students
b. you students

An account of the apparent number restriction involved here (first person *I* and singular *you* are not permitted) will be given below.

Collective nouns such as *committee* have an agreement pattern which looks more semantically based. To handle these nouns, we adopt Wechsler's (2003) AGG(REGATE) feature (though as an f-structure feature rather than purely semantic one). By default, [NUM *sg*] implies [AGG -] and [NUM *nonsg*] implies [AGG +]. But bipartite nouns like *scissors* can be interpreted either as singular or plural, even though they obligatorily require plural agreement, and these will be unspecified for AGG. In this system, NUM is essentially a feature which controls syntactic agreement, and AGG is the feature which feeds into the semantics. The features associated with a sample set of nouns is then as in (23):

- (23) a. *student* [NUM *sg*, AGG -]

- b. *students* [NUM *nonsg*, AGG +]
- c. *committee* [NUM *sg*]
- d. *scissors* [NUM *nonsg*]

The corresponding verb agreement rule will straightforwardly allow [NUM *sg*] noun phrases to unify with *prs sg* (as well as all *past*) verb forms. On the other hand, the “plural” verb form will be allowed to unify not only with [NUM *nonsg*], but also with [AGG +] noun phrases. This disjunction is inherent already to the double agreement pattern of collective nouns. For a bipartite noun such as *scissors*, the agreement can only be plural, however.

3.3 The nature of PERS

The person feature should be a set-valued feature (Dalrymple and Kaplan 2000) in order to account for coordination. In our treatment, only 1st and 2nd person pronouns and agreeing forms of *be* will be specified for PERS. Following Wechsler (2003), the “plural” forms will all be [AGG +]. “Singular” *you* is [AGG –], but like “plural” *you* regularly has *nonsg* verb agreement, e.g. *help, are*. The only unusual form is then *I*, which must likewise be treated as having *nonsg* verb agreement, but requiring special forms for *be*. The person and number features associated with the personal pronouns and determiners are then as in (24):

- (24) a. *I* [PERS {1}, NUM *nonsg*, AGG –]
- b. *you* [PERS {2}, NUM *nonsg*]
- c. *he, she, it* [NUM *sg*, AGG –]
- d. *we* [PERS {1}, NUM *nonsg*, AGG +]
- e. *they* [NUM *nonsg*, AGG +]

Because of the values associated with NUM, these feature specifications straightforwardly allow all noun phrases containing personal pronouns or determiners to unify straightforwardly with standard verbs. The syncretism seen in standard verbs follows simply from the fact that these have no PERS feature. The present tense forms of standard verbs have only NUM and AGG features, with the appropriate defining equations as in (25).

- (25) a. *helps*: (↑VFORM) = *fin*
 (↑TENSE) = *prs*
 (↑SUBJ NUM) = *sg*
- b. *help*: (↑VFORM) = *fin*
 (↑TENSE) = *prs*
 (↑SUBJ NUM) = *nonsg* ∨ (↑SUBJ AGG) = +

The forms of *be* will be essentially the same, as in (26).

- (26) a. *is* (↑VFORM) = *fin*
 (↑TENSE) = *prs*
 (↑SUBJ NUM) = *sg*
- b. *are*: (↑VFORM) = *fin*
 (↑TENSE) = *prs*
 (↑SUBJ NUM) = *nonsg* ∨ (↑SUBJ AGG) = +
- c. *am*: (↑VFORM) = *fin*
 (↑TENSE) = *prs*
 (↑SUBJ NUM) = *nonsg*
 (↑SUBJ AGG) = –
 (↑SUBJ PERS) = {1}

Rather than using a more complex set of assigning equations in (26b), we assume that the form *are* can be blocked from unifying with *I* because of the existence of the extra highly marked form *am*, which is the only verb form specified for person. The form *are* does of course surface in the negative interrogative: *aren't I?* However, we leave a fuller discussion of this issue to future work.

The feature specifications for personal determiners have the fringe benefit of predicting the mysterious distinction between (27a) and (27b):

- (27) a. *I student will not accept these changes!
 b. We students will not accept these changes!

This contrast now follows from the incompatibility of the NUM values for the personal determiner *I*, which is [NUM *nonsg*], and the noun *student*, which is [NUM *sg*]. The singular **you student* is analogously blocked.

4 Conclusion

In this paper we have proposed a new feature system to account for the selection and agreement properties of English verb forms. The generalisations which these features encapsulate enable both selection and subject agreement to be handled by unification, rather than by unidirectional mechanisms such as constraining equations. In the case of subject agreement, a unification procedure indeed seems to be forced by the data.

Perhaps the most distinctive aspect of this new feature set is the treatment of number. Essentially, our proposal treats person as solely a property of the first and second person pronouns and determiners, whose singular/plural distinction, as in Wechsler (2003), is captured by the feature AGG. This is justified by the well-known fact that the plural of 1st and 2nd person pronouns is not straightforwardly plural: *we* is not ‘I + plural’, in the sense that when I refer to ‘we’ I am not referring to a set of ‘Is’. The basic number distinction between [NUM *sg*] and [NUM *pl*] is then primarily a characteristic of traditional third person singular and plural forms. Such a feature system allows of course a paradigm of verb forms in which all traditional persons and numbers are expressed differently. But it also permits, as with English standard verbs, a system in which the traditional third person singular is distinguished by being the only form which is [NUM *sg*]. Typologically, such a system seems entirely plausible: the basic distinction in the person-number paradigm, if it exists, is between 3rd person singular and all other forms.

References

- Baerman, Matthew 2005. Typology and the formal modelling of syncretism. *Yearbook of Morphology* 2004: 41-72.
- Blackburn, Patrick & Claire Gardent 1995. A specification language for Lexical Functional Grammars. In: *Proceedings of the Seventh Conference of the European Chapter of the Association for Computational Linguistics*, 39–44.
- Brown, Dunstan and Andrew Hippisley 2012. *Network morphology: a defaults-based theory of word structure*. Cambridge: Cambridge University Press.
- Butt, Miriam, Tracy Holloway King, María-Eugenia Niño, and Frédérique Segond 1999. *A grammar-writer’s cookbook*. Stanford, CA: CSLI Publications.
- Chomsky, Noam 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
- Chomsky, Noam 1998. Minimalist inquiries: The framework. In: *MIT Occasional Papers in Linguistics* 15. Cambridge, MA: MITWPL.
- Corbett, Greville G. 2006. *Agreement*. Cambridge: Cambridge University Press.
- Dalrymple, Mary and Ronald M Kaplan 2000. Feature indeterminacy and feature resolution. *Language* 76: 759–798.
- Dyvik, Helge 1999. The universality of f-structure: discovery or stipulation? In Miriam Butt and Tracy Holloway Kind (eds.), *Proceedings of the LFG99 Conference*. Stanford, CA: CSLI Publications.
- Falk, Yehuda 1984. The English auxiliary system: a lexical-functional analysis. *Language* 60: 483-509.
- Falk, Yehuda 2001. *Lexical-Functional Grammar*. Stanford, CA: CSLI Publications.
- Hamm, Fritz and Michiel van Lambalgen 2005. Formal foundations for semantic theories of nominalization. Berlin: ZAS papers
- Hancox, Peter 1994. The uniform treatment of constraints, coherency and completeness in a Lexical Functional Grammar compiler. In *AI and*

- cognitive science '94: proceedings of the 7th annual conference*. Dublin: Dublin University Press, 129–142.
- Hancox, Peter 2003. Lexical Functional Grammar constraints and concurrent constraint programming. In *AI and cognitive science '05: proceedings of the 16th annual conference*. Coleraine: University of Ulster, 309–318.
- Huddleston, Rodney 2002a. The verb. In: Rodney Huddleston and Geoffrey K Pullum et al., *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press, 71–212.
- Huddleston, Rodney 2002b. Non-finite and verbless clauses. In: Rodney Huddleston and Geoffrey K Pullum et al., *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press, 1171–1274.
- Kaplan, Ronald M and Joan Bresnan 1982. Lexical-Functional Grammar: a formal system for grammatical representation. In Joan Bresnan (ed.), *The mental representation of grammatical relations*. Cambridge, MA: MIT Press, 173–281.
- Kaplan, Ronald M and Joan Bresnan 1995 [1982]. Lexical-Functional Grammar: a formal system for grammatical representation. In Mary Dalrymple, Ronald M Kaplan, John T Maxwell III and Annie Zaenen (eds.), *Formal issues in Lexical Functional Grammar*. Stanford, CA: CSLI Publications, 29–130 [Reprint of Kaplan & Bresnan 1982].
- Lehmann, Christian 1982. Universal and typological aspects of agreement. In Hansjakob Seiler and Franz J. Stachowiak (eds.), *Apprehension: das sprachliche Erfassen von Gegenständen II*. Tübingen: Narr, 201–267.
- Moravcsik, Edith A 1978. Agreement. In Joseph H Greenberg, Charles A Ferguson and Edith A Moravcsik (eds), *Universals of human language. Vol IV Syntax*. Stanford: Stanford University Press, 331–374.
- Payne, John and Rodney Huddleston 2002. The noun phrase. In Rodney Huddleston and Geoffrey K Pullum et al., *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press, 323–523.
- Pullum, Geoffrey K., and Deirdre Wilson 1977. Autonomous syntax and the analysis of auxiliaries. *Language* 53: 741–788
- Steele, Susan 1978. Word order variation: a typological study In: Joseph H. Greenberg, Charles A. Ferguson and Edith A. Moravcsik (eds), *Universals of Human Language: IV: Syntax*. Stanford: Stanford University Press, 585–623.
- Wechsler, Stephen 2003. Number as person. In Olivier Bonami & Patricia Cabredo Hofherr (eds), *Empirical issues in formal syntax and semantics. papers from CSSP 2003*. Paris: Colloque de Syntaxe et Sémantique à Paris.