

English Linguistics Ph.D. Programme
Eötvös Loránd University

Gáspár Miklós

COORDINATION IN OPTIMALITY THEORY

Abstract

Supervisor: Dr. Mark Newson

Budapest

2005

1 Rationale

For a three-letter word, *and* has received far more than its fair share of attention from generative syntacticians over the last half a century. Coordination has been problematic for a diverse range of grammatical theories. Early generative theories followed traditional grammar in assuming that coordination represented a fundamentally different structural relationship to subordination in that the latter involved a hierarchical organisation while coordination involves the symmetrical combination of elements. This view persisted into the first versions of X-bar Theory, which exclusively dealt with grammatical relations in terms of subordination – so coordination was seen as outside the scope of the theory, requiring a syntactic treatment unique to the construction. However, during the emergence of the view that functional categories have grammatical importance within the Principles and Parameters (PP) framework in the late 1980s and early 1990s, trying to accommodate coordination into X-bar Theory has created many problems: either unique rules for coordination still had to be assumed (Goodall 1987, Johannessen 1993, 1996, Wilder 1994, 1997), the three-level X-bar structure had to be abandoned (Munn 1992, 1993, 2000) or, when coordination fit the pattern perfectly, it failed to correctly predict attested word order patterns (Johannessen 1998).

Theories working without the assumption of syntactic constituent structure have also encountered difficulties. They could not account for the basic observation that the conjunction is inserted between pre-formed conjuncts, leaving them intact. As a result, structureless grammars such as those developed by Hudson (1987, 1990, 2003), Mel'čuk (1988), Pickering and Barry (1993) and Zeevat (1988, 1991) had to introduce special rules just to account for coordination – allowing the formation of phrases. These rules go against the spirit of the theories at large, weakening the theoretical claims made by the grammars.

For these reasons an account of coordination within a grammatical theory that is in its infancy is both a challenge and an opportunity: many aspects of the grammar that would be available in a more mainstream framework need to be developed in order to be able to tackle coordination. At the same time, if the need to account for coordination is itself a driving force behind the development of the general theory, it will ensure that a theory of coordination will not require the introduction of special rules that contradict fundamental assumptions. It is this challenge-cum-opportunity that I have attempted to tackle in my thesis: to provide a theory of coordination within a restrictive version of Optimality Theory (OT), an alignment-based grammar that excludes all but a strictly defined set of permissible constraints.

2 Research questions

The dissertation aims at providing answers to the following questions:

Questions related to basic OT theoretic mechanisms:

- What is the nature of the input in OT?
 - How is the OT input organized?
 - What information is present in the input for each lexical item?
 - How is coordination encoded in the input?
- What constraints are allowed in the constraint inventory?
 - Which constraint families are minimally necessary in the grammar?
 - How can different sorts of elements, including the conjunction, be brought under a maximally general theory of constraints?
 - How are the candidates evaluated with respect to the constraints established?

Questions related to the properties of coordination and ellipsis:

- How is the direction of ellipsis determined?
- How can ellipsis constructions receive interpretation?
- How is the placement of the coordinative conjunction determined?
- How can languages with different conjunction particles be accounted for?

3 Theoretical background

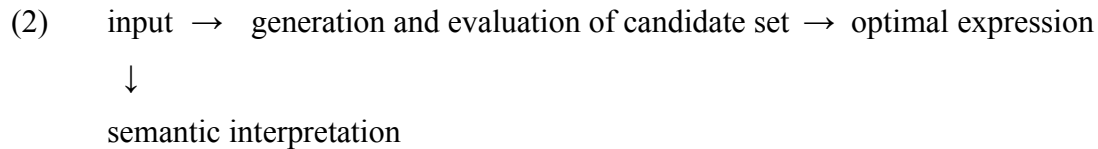
In Chapter 2 different optimality theoretical approaches (Speas 1997, Grimshaw 1997, Newson 1998) are reviewed in terms of their treatment of the main building blocks of OT syntax, which are illustrated in (1):

(1) Input → Gen → Candidate Set → Eval → Optimal Candidate

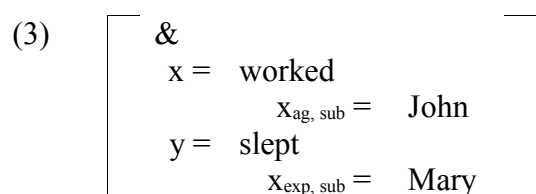
The input

The input is typically viewed as a set of words picked from the lexicon to serve as a basis for a sentence (Grimshaw 1997, Speas 1997, Newson 1998). Although opinions as to what type of information is included in the input vary to some extent it is generally assumed that the input for a simple sentence is a verb and its arguments with an assignment of their associated theta-roles, tense values, semantically meaningful auxiliaries, an assignment of discourse functions like topic and focus as well as an indication of scope relations between scope bearing elements (Grimshaw 1997, Legendre et al. 1998, Grimshaw and Samek-Lodovici 1998). I

extend this view by arguing that the assignment of the topic and the subject roles are obligatory in every input. The frameworks mentioned above differ in their treatment of the syntax-semantics relationship. I adopt Newson's (1998) view, which argues that the input is the sole interface between syntax and semantics, resulting in a grammatical model as in (2).



I propose that the input is best viewed as a data structure. When a predicate, for instance, is inserted into an input, the appropriate number of argument data slots are created to match the theta-requirements of the input verb. This view is extended to cover not only predicates, but also other types of elements that act as semantic organizers, or functors. Sentential operators, which take propositions as their arguments, also function as functors. The input is organized around the central functor of the semantic expression, which in the case of coordination is the conjunction element. The inclusion of this element in case of simple coordination creates two data slots for what I term functees in the input. The functees of the conjunction are the functors of the propositions being coordinated, e.g. the verbal predicates. An example of such an input data structure is provided below for the sentence *John worked and Mary slept*.



In contrast to the works cited above, I will not view the elements in the input as the enumeration of words from the lexicon, but as abstract feature bundles, which are matched in the winning candidate by the Vocabulary Items available in the language's lexicon. This view is an adaptation of Distributed Morphology (Halle and Marantz 1993) into OT, in which what is normally called the lexicon is consulted only after the syntactic derivation has been completed, at which point the abstract grammatical entities are mapped to corresponding phonological forms. This view will remove a redundancy from OT apparent when the lexicon is taken as the starting point of the grammar: in case a candidate in which the input elements are altered during the derivation process becomes optimal, the actual form of the lexical items

would not be available in the grammatical candidate even under the traditional, lexicalist view. As such the lexicon needs to be consulted post-syntactically. This would be redundant if we assumed that the lexicon is also the starting point of the grammar.

The generator and the candidate set

The generator (GEN) prepares possible representations of a given input, which compete for grammaticality. It is standardly assumed (Prince and Smolensky 1993) that only linguistically possible processes are allowed and that all input structures contain the input. This does not, however, mean that every input element or feature must be overtly present in every candidate: it only means that even if some input element or feature is underparsed, the fact that it was once part of the input is transparent to the Evaluation process.

In the theories of Speas (1997) and Grimshaw (1997) GEN provides structure to the input, and this structure conforms to X-bar Theoretical axioms. A different position is taken by Hordós (2003), who demonstrates that previously sacrosanct principles such as X-Bar Theory and the Binary Branching Condition may be translated into violable constraints. However, Hordós (2003), too, retains constituent structure building as one of the processes performed by GEN.

The framework developed by Newson (2000) deviates even further from mainstream syntactic theories: phrases and any notion of constituent structure are viewed as epiphenomenal. GEN's role under this view consists only of preparing all logically possible permutations of the input elements, including the option of underparsing one or more element or input feature. It is this view that is adopted in the present work.

The evaluator and the constraints

The evaluator (EVAL) selects the optimal candidate from the candidate set using the constraints. The competing candidates are evaluated against a given ranking of a set of constraints. The optimal candidate is the one that satisfies the constraints the most harmonically under a particular ranking.

Constraints are conflicting statements about the well-formedness of the output or the relation between the input and the output. As they conflict with each other, all candidates are bound to violate at least some of them, but constraint violation does not automatically imply ungrammaticality. The constraints are violable and ranked: each having absolute dominance

over all the lower ranked constraints. An output structure minimally violates a particular ranking, and is hence optimal, if all alternative structures that have an equal or better score on some constraint do worse on some higher-ranking constraint. The constraints are seen as universal and their relative re-ranking is the single source of grammatical variation among languages (Prince and Smolensky 1993).

Establishing restrictions on what could count as possible constraints was begun to be addressed by Grimshaw (1998), who proposed that only constraints that are similar and related to other constraints are allowed in the grammar. EVAL will then consist of such families of constraints. Grimshaw (1998), however, did not propose conditions on what could count as constraint families and how many such families may be allowed.

Newson (2000) proposes a much more constrained theory: besides the constraint banning underparsing of input material, only alignment constraints are allowed in his grammar. Alignment constraints are normally understood to place elements to the right or left edge of some domain. The notion of domain presupposes structure, so a structure-free definition of alignment is that constraints align elements to each other, either to the left or to the right. This strict view of constraints is adopted here.

In describing argument alignment, Newson (2000) makes use of constraints that align some element to a predicate. While the constraint family proposed can account for languages with SVO word order such as English, as well as a few less frequently attested language types, it cannot predict the SOV pattern, which is the second most common type (Comrie 1981). In order to account for these languages as well as for various phenomena that do not appear to be related to placing one element with respect to another element, but with respect to the string as a whole, I introduce a second family of constraints. First and last constraints require a certain element to be placed at the beginning or the end of the string, respectively.

Another extension of the theory proposed by Newson (2000) concerns the generality of his pairwise alignment constraints. The focus of Newson (2000) was the predicate-argument relationship. I propose that by introducing the more general notion of functors and functees, the use of these constraints can be extended to cover other relationships, including coordination.

A key mechanism in alignment OT, cyclicity (Newson 2000, Newson and Gáspár 2001), is also revised in the present work. Typically in OT it is assumed that the candidate set is evaluated as a whole by the ranked constraints in a single competition until the optimal candidate is decided on. In a restricted grammar operating exclusively with alignment and faithfulness constraints and without the notion of phrases, however, it is necessary to alter this mechanism. Under cyclicity, the candidate set is evaluated against the ranked constraints in a number of cycles, each of which limits the scope of the satisfaction of the constraints to a particular predicate or other functor. In each cycle, facts about non-relevant functors are simply ignored. The optimal candidate is gradually homed in on through a number of cycles, beginning with the top functor. The effect of the version of cyclicity introduced in the present work is that each cycle is ‘blind’ to the internal make up of items it places: the focus of the evaluation at each cycle is the satisfaction of a particular constraint in terms of the relationships between the functor at the focus of the cycle and its immediate functees, regardless of how elements lower down the semantic hierarchy are placed. Once its functees are placed with respect to the superordinate functor, these functees will be the focus of successive functor cycles, proceeding hierarchically from the top down. The items placed by the superordinate functor cycle are put in place at this stage – since candidates in which their relative order was different were eliminated in the previous cycle. Not only does this view enable an account of coordination, it also solves persistent problems under the original alignment OT account.

The goal of the thesis is not only to provide an account for coordination, but also to carry forward the alignment OT research program in general. It is demonstrated that the introduction of first/last constraints and the redefinition of cyclicity have general relevance, and are in fact motivated by linguistic facts other than coordination.

4 Summary of the chapters

In **Chapter 1** I introduce the issue of coordination and ellipsis by reviewing some of the influential accounts that have been proposed. I conclude that in many ways the ellipsis approach to coordination (van Oirsouw 1987, Wilder 1994, Wilder 1997, Donati 1999) is superior to the small conjunct approach (Williams 1978, Larson 1988, Johannessen 1993, Munn 2000) and will adopt it for my own work. I also discuss the problems encountered by syntacticians who tried to fit coordination into structure occurring elsewhere in terms of X-bar

Theory (Jackendoff 1977, Radford 1981, Munn 1987, 1992, 1993, 2000, Goodall 1987, Johannessen 1993, 1998).

I also review the coordination accounts in grammars that view syntactic structure as epiphenomenal (Hudson 1987, 1990, 2003, Mel'čuk 1988, Barry and Pickering 1990, Zeevat 1988, 1991, Alberti 1999). I show the problems they have encountered trying to develop a “structureless” view of coordination, where phrases do appear to be present in as much as the coordinative conjunction always sits between the conjuncts, never within them.

In this chapter I also motivate a different view of ellipsis than has been traditionally assumed (van Oirsouw 1987, Wilder 1994, 1997, Bartos 2001), arguing that the directionality of argument ellipsis is related to the basic word order patterns of a language and as such does not need to be independently stipulated.

In **Chapter 2** I introduce the framework I am adopting: Optimality Theory. After a review of standard optimality theoretical assumptions, I introduce a more restrictive version of this framework, Alignment OT. The results of these investigations were summarized in the previous section of this Abstract.

In the second half of the chapter I illustrate the power of the grammar developed by providing an account for topicalization in a variety of languages exhibiting very different behavior in terms of topics. I also argue that in the often neglected, verb-initial Hungarian pattern illustrated below the word immediately following the emphatic verb is the topic. This will have important consequences for the understanding of certain Hungarian ellipsis constructions.

- (4) SZERETI Mari Jánost
 loves Mari János-ACC
 ‘(Of all the possible emotions) it is love that Mary feels towards John.’

In **Chapter 3** I provide an account for the placement of the coordinative conjunction within Alignment OT. I show how the extension of the predicate-alignment constraints to functors, such as the conjunction, yields a framework that can account for the crosslinguistic distribution of the conjunction particle via the reranking of the relevant constraints. The theory

developed predicts the following conjunction patterns, where each *C* represents a conjunct and & the coordination particle:

- (5) a. (C) ... C & C
- b. C & C ... (C)
- c. (C) ... C C &
- d. & C C ... (C)
- e. C C ... (C)

Of the five patterns predicted by the grammar, all but one are attested: (5b) is the most common type, found in most European languages, including English. (5a) is found in Japanese and Sidaamu Afo of southern Ethiopia, while (5c) is the pattern attested in Cayuga, an Iroquoian language spoken in Ontario. (5e) represents asyndetic coordination – when conjunction is not marked by a particle, but via juxtaposition and intonation. Kamchadal, spoken in Siberia, Gurung, spoken in central Nepal and Kathlamet, an Amerindian language are examples of the asyndetic coordination pattern. (5d) is the predicted pattern not attested – which I treat as an accidental gap.

The second half of the chapter discusses more complex cases, including languages that use different coordination particles to conjoin different types of conjuncts. Since the syntactic behavior of these coordination particles never appears to differ from one another, I develop an account based on Distributed Morphology (Halle and Marantz 1993), in which the syntactic process is the same for all cases, and the particle with the best matching features is inserted into the optimal candidate from among the Vocabulary Items of the language.

Chapter 4 focuses on ellipsis. I demonstrate that, given the assumptions of Chapter 2, OT constraints responsible for basic word order facts are able to account for argument ellipsis – and as such the direction of ellipsis is a consequence of word order facts and does not need to be independently stipulated. I also illustrate that the directionality of predicate ellipsis, or gapping, does not show such strict correlation with basic word order patterns, contrary to Ross' (1970) generalization. This asymmetry between argument and predicate ellipsis is in fact predicted by the alignment account developed, since – owing to the lack of predicates in gapping constructions – predicate alignment constraints are irrelevant in gapping cases, which are explained using first/last constraints.

In the second half of the chapter I show how this basic theory can account for a wide range of argument ellipsis and gapping constructions in both English and Hungarian.

In **Chapter 5** I substantiate the assumption that ellipsis is essentially a semantic process: it is up to the semantic component of the grammar to reconstruct elided material missing from all other levels of grammatical description. In the framework adopted semantic interpretation is based on the input of the optimality system. Thus the input is the foundation of ellipsis phenomena – as much as it contains gaps for material that is elided. I suggest that semantic reconstruction of missing input material occurs via a higher-order unification process (Huet 1975, Dalrymple et al. 1991) and that the sentence receives interpretation only if this unification process succeeds. In other words, while the syntactic system churns out an optimal candidate for every input fed into it, if the input is uninterpretable the grammatical candidate will be semantically anomalous.

The theory for semantic recovery I introduce is a two-step process: the pre-unificational competition that selects the most similar item from among the input items of the full conjunct to serve as the potential blueprint for the reconstruction of the ellipsis gap, followed by the unification procedure itself, during which it is established whether the selected item and the gap have feature sets that are non-conflicting enough for unification to take place.

Chapter 6 summarizes the main assumptions, results and directions for future research.

5 The findings: answers to research questions

Questions related to basic OT theoretic mechanisms:

What is the nature of the input in OT?

How is the OT input organized?

The OT input is best conceptualized as a semantic data structure. The inclusion of semantic organizing elements, functors, results in the creation of data slots for their funtees. Functors include predicates, nominals as well as several sentential operators, including the coordinative conjunction. All but the top functor of an input also act as funtees.

What information is present in the input for each lexical item?

The elements in the input are not lexical items but abstract feature bundles that are mapped to corresponding phonological forms following the syntactic process (Halle and Marantz 1993). Since the input is the sole syntactic interface to semantics (Newson 1998), the input needs to contain all semantically relevant information. The nature of the data structure template already encodes thematic information, but information roles such as topic and focus and scopal information are also marked as features on input elements. The subject feature is obligatorily assigned to the argument that is most prominent according to Grimshaw's (1990) argument hierarchy (Newson 1998), and the assignment of a topic feature per predicate is also compulsory (Gáspár 2004).

How is coordination encoded in the input?

The coordinative conjunction, which as a lexical operator heads its own proposition, is treated as a functor, taking propositions as its functees. The propositions are represented by the verbs that serve as the functors of these propositions. A coordinative conjunction functor may have two or more arguments.

Ellipsis is encoded in the input as a missing input element, giving rise to an impoverished input (Newson and Gáspár 2001). Though inputs that are impoverished will be uninterpretable under most circumstances, in case of ellipsis the other conjunct may serve as blueprint for the interpretation of the missing element.

What constraints are allowed in the constraint inventory?*Which constraint families are minimally necessary in the grammar?*

The grammar consists of three types of constraints: the PARSE constraint, which sanctions against the removal of input material from the candidates, pairwise alignment constraints, which determine the placement of two elements that are in a licensing relationship (such as a predicate and its arguments) as well as first/last alignment constraints, which determine the placement of an input element with respect to all other input elements within a domain established in terms of input relationships. A pair of first/last constraints is defined for every kind of input element or feature.

How can different sorts of elements, including the conjunction, be brought under a maximally general theory of constraints?

Pairwise constraints are maximally general functor-funtee constraints. A pair of constraints is defined for the alignment of functors and their licensors (f_L/L_f) as well as for functors and their funtees (f_A/A_f). These constraints may realize to the different kinds of functors so that we have, for instance, f_vL/Lfv and f_vA/Afv as well as $f_{\&}L/Lf_{\&}$ and $f_{\&}A/Af_{\&}$.

How are the candidates evaluated with respect to the constraints established?

Candidates are evaluated cyclically from the top down. First the constraints evaluate the candidates with respect to the top functor and its immediate funtees, ignoring the position of other input items in the string. Once the ordering of the top functor with respect to its funtees has been established, the constraints evaluate the surviving candidates with respect to the next level of functor(s). The order of the top functor and its funtees will be fixed by this stage – since only candidates in which these are optimally ordered will survive the first cycle. Cycles continue until there is only one surviving candidate or the most deeply embedded functor is evaluated.

Questions related to the properties of coordination and ellipsis:

How is the direction of ellipsis determined?

In most cases the direction of ellipsis can be derived from the internal word order of individual conjuncts, and does not need to be stipulated as in Wilder (1994, 1997), among others. In a language where the object must follow the verb, a clause with an elided object must precede the conjunct with the overt object, so that the object is on the right side of both verbs. Similarly if subjects precede verbs in the basic word order of the language, if a subject is elided, then the clause with the missing subject must follow the other so that the overt subject can be on the left of both verbs. Contrary to the generalization made by Ross (1970), on the other hand, the direction of verbal ellipsis, or gapping, cannot be derived from basic word order patterns.

How can ellipsis constructions receive interpretation?

The content of an elided element needs to be recovered from information available in the input. If an element in the full conjunct is sufficiently parallel with the missing element, the missing element can receive interpretation. In the semantic framework developed, semantic recovery occurs via higher order unification (Huet 1975, Dalrymple et al. 1991) – and the

input becomes interpretable only if semantic unification succeeds. The optimal candidates generated from inputs whose semantic unification fails yield unacceptable sentences.

How is the placement of the coordinative conjunction determined?

Since it is a functor, the placement of the conjunction particle is prescribed by the functor constraints: $f\&L/Lf\&$ and $f\&A/Af\&$. The relative ranking of the four constraints with respect to each other and the PARSE constraint determines the placement of the conjunction particle. In most languages, one of the conjuncts acts as a licenser and will be placed to the opposite side of the conjunction than the other conjuncts. In some languages all conjuncts are placed on the same side. When the $f\&A$ and $Af\&$ constraints are both ranked above PARSE, underparsing the conjunction item will be optimal, as it allows simultaneous satisfaction of the conflicting functor-funtee constraints. This pattern accounts for languages that mark coordination by juxtaposition, without a conjunction particle.

How can languages with different conjunction particles be accounted for?

Syntactically, the conjunction behaves the same way even if its form differs in case of nominal and verbal coordination (Welmers 1973). This observation is captured by the Late Insertion process adopted from Distributed Morphology (Halle and Marantz 1993). Languages that demonstrate this behavior contain more than one Vocabulary Item for the coordinative conjunction. The feature specifications of the items differ in terms of the type of conjuncts they can conjoin. When the lexicon is consulted, the Vocabulary Item with the closest set of matching features is inserted, depending on the type of conjuncts. In case of languages with a uniform coordinative conjunction particle, the closest match from the list of Vocabulary Items is the same particle in every case.

6 References

- Alberti, G. (1999): 'The Grammar of Total Lexicalism,' *Working Papers in the Theory of Grammar* 6/1. Theoretical Linguistics Programme, Eötvös Loránd University, Budapest and Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest.
- Barry, G. and M. Pickering (1990): 'Dependency and constituency in categorical grammar,' in G. Barry and G. Morrill (eds.) *Edinburgh Working Papers in Cognitive Science (5): Studies in categorical grammar*, 23-45.
- Bartos, H. (2001): 'Sound-form non-insertion and the direction of ellipsis,' *Acta Linguistica Hungarica* vol. 48 (1-3), pp. 3-24.
- Comrie, B. (1981): *Language universals and linguistic typology: Syntax and morphology*, University of Chicago Press.
- Dalrymple M., S. M. Shieber and F. Pereira (1991): 'Ellipsis and higher-order unification,' *Linguistics and Philosophy* 14(4), 399-452.
- Donati, C. (1999): 'Merge Copy,' presentation given at the 21st Annual Meeting of the DGfS, University of Konstanz, Feb. 24-26.
- Gáspár, M. (2004): 'Topic Universality in OT inputs,' in L. Varga (ed.) *The Even Yearbook* 6, 60-73.
- Goodall, G. (1987): *Parallel structures in syntax. Coordination, causatives and restructuring*, Cambridge University Press.
- Grimshaw, J. (1990): *Argument Structure*, MIT Press, Cambridge, Mass.
- Grimshaw, J. (1997): 'Projection, Heads and Optimality,' *Linguistic Inquiry* 28, 373-422.
- Grimshaw, J. (1998): 'Constraints on Constraints,' ms., Rutgers University, New Brunswick, New Jersey.
- Grimshaw, J. and V. Samek-Lodovici (1998): 'Optimal Subjects and Subject Universals,' in P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis and D. Pesetsky (eds.) *Is the Best Good Enough? Optimality and Competition in Syntax*, MIT Press, Cambridge, Mass., 193-219.
- Halle, M. and A. Marantz (1993): 'Distributed morphology and the pieces of inflection,' in K. Hale and S. J. Keyser (eds.) *The View from Building 20*, MIT Press, Cambridge, Mass., 111-176.
- Hordós, M. (2003): 'Gerunds in Optimality Theory,' Doctoral dissertation, Eötvös Loránd University, Budapest.
- Hudson, R. (1987): 'Zwicky on heads,' *Journal of Linguistics* 23, 109-132.
- Hudson, R. (1990): *English Word Grammar*, Oxford: Blackwell.

- Hudson, R. (2003): 'An Encyclopedia of English Grammar and Word Grammar,' ms., University College London.
- Huet, G. (1975): 'A Unification Algorithm for Typed λ -Calculus,' *Theoretical Computer Science* 1, 25-57.
- Jackendoff, R. (1977): *X'-Syntax: A Study of Phrase Structure*, MIT Press, Cambridge, Mass.
- Johannessen, J. B. (1993): 'Coordination. A minimalist approach,' Doctoral dissertation, University of Oslo.
- Johannessen, J. B. (1996): 'Partial agreement and coordination,' *Linguistic Inquiry* 27/4, 661-676.
- Johannessen, J. B. (1998): *Coordination*, Oxford University Press.
- Larson, R. (1988): 'On the Double Object Construction,' *Linguistic Inquiry* 19: 335-391.
- Legendre, G., P. Smolensky and C. Wilson (1998): 'When is less more? Faithfulness and Minimal Links in wh-chains,' in P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis and D. Pesetsky (eds.) *Is the Best Good Enough? Optimality and Competition in Syntax*, MIT Press, Cambridge, Mass., 249-289.
- Mel'čuk (1988): *Dependency Syntax: Theory and Practice*, SUNY Press, Albany, New York.
- Munn, A. (1987): 'Coordinate structure and X-bar theory,' *McGill Working Papers in Linguistics* 4, McGill University, Montreal.
- Munn, A. (1992): 'A null operator analysis of ATB gaps,' *The Linguistic Review* 9: 1-26.
- Munn, A. (1993): 'Topics in the Syntax and Semantics of Coordinate Structures,' Doctoral dissertation, University of Maryland, College Park.
- Munn, A. (2000): 'Three types of coordination asymmetries,' in K. Schwabe and N. Zhang (eds.) *Ellipsis in Conjunction*, Max Niemeyer Verlag, Tübingen, 1-22.
- Newson, M. (1998): 'Logical form,' ms., Eötvös Loránd University, Budapest.
- Newson, M. (2000): 'A restrictive theory of alignment and some of its consequences,' ms., Eötvös Loránd University, Budapest.
- Newson, M. and M. Gáspár (2001): 'Coordination, Ellipsis and Impoverished Inputs,' talk presented at the 4th NWCL International Conference, University of Salford, Nov. 16-18.
- van Oirsouw, R. R. (1987): *The syntax of coordination*, Croom Helm, London.
- Pickering, M. and G. Barry (1993): 'Dependency categorical grammar and coordination,' *Linguistics* 31: 855-902.
- Prince, A. and P. Smolensky (1993): *Optimality Theory: constraint interaction in generative grammar*, RuCCS Technical Report #2, Rutgers University Center for Cognitive Science, Piscataway, New Jersey.

- Radford, A. (1981): *Transformational Grammar*, Cambridge University Press.
- Ross, J. R. (1970): 'Gapping and the Order of Constituents,' in M. Bierwisch and K. E. Heidolph (eds.) *Progress in Linguistics*, Mouton, The Hague, 249-259.
- Speas, M. (1997): 'Optimality Theory and Syntax: Null pronouns and Control,' in D. Archangeli and D. T. Langendoen (eds.) *Optimality Theory. An Overview*, Blackwell, Malden, Mass., 171-199.
- Welmers, W. E. (1973): *African Language Structures*, University of California Press, Berkeley.
- Wilder, C. (1994): 'Coordination, ATB and Ellipsis,' in Zwart, J.-W. (ed.), *Minimalism and Kayne's Antisymmetry Hypothesis*, Grönigen Arbeiten zur Germanistischen Linguistik vol. 37, 291-331.
- Wilder, C. (1997): 'Some Properties of Ellipsis in Coordination,' in A. Alexiadou and T. A. Hall (eds.), *Studies on Universal and Typological Grammar*, Linguistik Aktuell vol. 13, pp. 59-107.
- Williams, E. (1978): 'Across-the-board rule application,' *Linguistic Inquiry* 9, 31-43.
- Zeevat, H. (1988): 'Combining Categorical Grammar and Unification,' in U. Reyle, C. Rohrer (eds.) *Natural Language Parsing and Linguistic Theories*, D. Reidel, Dordrecht, 202-229.
- Zeevat, H. (1991): 'Aspects of Discourse Semantics and Unification Grammar,' Doctoral dissertation, University of Amsterdam.