# The Simple Generator*

*Ralf Vogel*

Universität Potsdam

I argue that the shift of explanatory burden from the generator to the evaluator in OT syntax – together with the difficulties that arise when we try to formulate a working theory of the interfaces of syntax – leads to a number of assumptions about syntactic structures in OT which are quite different from those typical of minimalist syntax: formal features, as driving forces behind syntactic movement, are useless, and derivational and representational economy are problematic for both empirical and conceptual reasons. The notion of markedness, central in Optimality Theory, is not fully compatible with the idea of synactic economy. Even more so, seemingly obvious cases of blocking by structural economy do not seem to result from grammar proper, but reflect (economical) aspects of language use.

*Keywords: OT syntax, generator, markedness, syntax-semantics interface, syntax-phonology interface*

The history of the Chomskyan branch of generative syntax can be seen as an attempt to explain syntactic regularities as much as possible as the result of the rules that govern syntactic construal. Ideally, generatibility and well-formedness converge: every expression that can be generated is well-formed. Grammatical constraints, if they exist, are constraints on syntactic generation, they ideally apply within the derivational process.

This high emphasis on procedural aspects of syntax models has often been challenged, first of all by representationally oriented models like LFG, HPSG, a.o. While I do not want to make a claim related to this issue, I will discuss in

* I would like to thank the audience of the DEAL conference Dec 17-19, 2005, for an extremely helpful discussion, and Hans Broekhuis for comments on an earlier draft of this paper. The work on this paper was partially supported by a grant for the research group "Conflicting Rules in Language and Cognition", project A3, "Minimality in Optimality Theory", FOR-375/A3.

**Linguistics in Potsdam 25 (2006): 99–136**
Hans Broekhuis and Ralf Vogel (eds.):
Optimality Theory and Minimalism: a Possible Convergence?

this paper how the relation between derivational and representational aspects is handled in Optimality theoretic grammars.

OT makes a distinction between output candidates and optimal outputs. The two sets of generatible and well-formed expressions are non-identical. Prince & Smolensky (1993, 2004) argue that this distinction is already implicit in the history of generative grammar. They observe a shift in focus from the rules for the generation of expressions to well-formedness constraints on output structures. This becomes clear in the following quote:

> "As originally conceived, the *RULE* of grammar was to be built from a Structural Description delimiting a class of inputs and a Structural Change specifying the operations that altered the input (e.g. Chomsky 1962). The central thrust of linguistic investigation would therefore be to explicate the system of predicates used to analyze inputs – the possible Structural Descriptions of rules – and to define the operations available for transforming inputs – the possible Structural Changes of rules. This conception has been jolted repeatedly by the discovery that the significant regularities were to be found not in input configurations, nor in the formal details of structure-deforming operations, but rather in the character of the output structures, which ought by rights to be nothing more than epiphenomenal. We can trace a path by which "conditions" on well-formedness start out as peripheral annotations guiding the interpretation of rewrite rules, and, metamorphosing by stages into constraints on output structure, end up as the central object of linguistic study.
>
> As the theory of representation in syntax has ramified, the theory of operations has dwindled in content, even to triviality and, for some, non-existence. [. . . ] "
> (Prince & Smolensky 1993, 1; Prince & Smolensky 2004, 1)

The shift in perspective that is formulated here is directly reflected in the architecture of an OT grammar:

(1) **Structure of an OT grammar**

a. $Gen(In_k) \rightarrow \{Out_1, Out_2, \dots\}$

b. $H\text{-}Eval(Out_i, I \leq i \leq \infty) \rightarrow Out_{real}$

(Prince & Smolensky 1993, 4; Prince & Smolensky 2004, 5

The grammar derives pairs of underlying forms and output forms ($input_i$, $output_i$). Each input form is combined with a candidate set of possible output forms by the candidate generation function Gen. H-Eval compares the candidate outputs on the basis of the set of violable constraints which are ordered in a lexicographic ranking. The optimal candidate is the one that performs best on the constraint hierarchy.

The generator determines what constitutes a possible candidate, i.e., what a linguistic structure is in general. One could also state that Gen consists of inviolable constraints. About the relation of Gen and H-Eval, and their status within the theory, Prince & Smolensky say the following:

> " [...] The function H-eval determines the relative Harmony of the candidates, imposing an order on the entire set. An optimal output is at the top of the harmonic order on the candidate set; by definition, it best satisfies the constraint system. Though Gen has a role to play, the burden of explanation falls principally on the function H-eval, a construction built from well-formedness constraints, and the account of interlinguistic differences is entirely tied to the different ways the constraint-system H-eval can be put together, given UG. [...]
>
> Optimality Theory, in common with much recent work, shifts the burden from the theory of operations (Gen) to the the-

> ory of well-formedness (H-eval). To the degree that the theory of well-formedness can be put generally, the theory will fulfill the basic goals of generative grammar. To the extent that operation-based theories cannot be so put, they must be rejected. [...] "
> (Prince & Smolensky 1993, 5)

This quote makes clear that Optimality theory is conceived as a rival to operation based theories of grammar. The minimalist program as developed by Chomsky (1995), and further extended in later work by Chomsky and his many collaborators, is the most important current theory of this kind in syntax.[1]

Optimality Theory shifts the explanatory burden of a grammar model from the derivational system, the generator, to the system of wellformedness constraints. As a consequence of this, the generator function should be as unconstrained and simple as possible. Let us assume, as a starting point, that we choose a minimalist generator for an OT syntax model. The minimalist generator has at least the following components:

- Merge and Move:
  - substitution
  - adjunction (XP, $X^0$)
  - multiple specifiers
- feature checking
- feature strength (alternatively, EPP-features)

[1] Some aspects of minimalism look like candidate competition. A minimalist derivation starts with a list of lexical items, the numeration, initially picks two of them and merges them. From this stage on, there is always a choice for the next derivational step: either a new lexical item from the numeration is merged with the structure, or an element within the structure is moved. This choice between Merge and Move is one motivation for the model of serial optimisation explored by Heck & Müller (2000), which is based on the minimalist architecture.

- interface interpretation

The work of some of these components is taken over by the Eval component of the OT grammar. If the OT generator is designed in a minimalist fashion, then *simplification* should mean that the OT generator gets rid of some of these components. I will try to defend the following claims in this paper:

1. Formal features are the ideal candidate for such a reduction, including the associated mechanisms, feature checking, feature driven movement etc. As a consequence, the notion of 'interface interpretation' – the core motivation for features and feature checking –, becomes superfluous, too.

2. Simplicity is not necessarily equal to economy of representation. Markedness considerations suggest that the least marked structures are in balance between *compression* and *redundancy*.

3. A convincing theory of the syntax-prosody mapping imposes particular uniformity requirements on syntactic structures.

## 1 Simplifying the Syntactic Aparatus

### 1.1 Broekhuis 2000 (and others): Eliminate Feature Strength

In early minimalism, movement of *wh*-items is triggered by strong features (alternatively, nowadays, a *wh*-feature on a head with an EPP-feature). The dimension of feature strength (strong vs. weak feature) or the optional presence of EPP-features is not necessary under an OT approach where movement is regulated by the relative rank of the derivational economy constraint STAY. This has been demonstrated, among others, in minimalist work on *wh*-movement (Grimshaw 1997, Ackema & Neeleman 1998, Legendre et al. 1998) and Object Shift (Broekhuis 2000).

The OT generator has the task to generate a set of candidate structures for a given input. In minimalist terms, this means that structures with strong features and structures with weak features are generated in parallel. It is the task of the wellformedness constraints to select the optimal output. The ideal of a minimalist grammar is that one input (or: numeration) can only lead to one single well-formed output. Assuming feature strength (or, nowadays, EPP features) is one way to ensure this.

Broekhuis (2000) argues that one advantage of the OT model lies in the ability to derive what he calls *conditioned feature checking*. In Scandinavian, object shift, the movement of an object noun phrase outside of VP, applies if three conditions are met: (i) the verb has left the verb phrase, (ii) the object is an unstressed pronoun, (iii) no other material c-commanding the object is left within VP.

(2) Object shift in Swedish: (Holmberg 1999)

a. *Jag kysste henne inte*
I kissed her not
b. ??Jag kysste inte henne
c. *Jag kysste inte Marit*
I kissed not Marit
d. *Jag kysste Marit inte

Broekhuis (2000) follows earlier analyses of this phenomenon in that he assumes that the object pronoun in (2-a) moves to its case position, i.e. in a position where it checks its case feature. An early minimalist analysis would assume here that the case feature either on the noun or on the head AGR-O, which checks the case feature, must be strong in order to evoke this movement.

But then there must be an unchecked strong case feature in (3-a), which should, erroneously, lead to ungrammaticality. It further remains unclear why (3-b) is ill-formed.

(3) a. *Jag har inte kysst henne*
I have not kissed her

b. **Jag har henne inte kysst*
I have her not kissed

Broekhuis (2000) shows how OT offers a way out: case is unchecked in Swedish in principle, but case movement can be triggered by another factor, here it is the constraint D-PRONOUN which requires definite pronouns to leave VP.

Broekhuis further assumes that the minimal link condition is an inviolable constraint on the generator: there will only be candidates that fulfil the MLC. This explains why (3-b) is ungrammatical: although this structure would fulfil D-PRONOUN, it will not even be generated since the object's movement outside VP violates the MLC if the verbal head has not moved out of VP itself. Broekhuis assumes the constraints CASE, which requires case features to be checked and STAY, which penalises syntactic movement (cf. Grimshaw 1997). The ranking that derives the above observations about object shift is as follows:

(4) D-PRONOUN ≫ STAY ≫ CASE

The minimalist conception of feature strength is in this account replaced by the relative rank of the constraint that requires feature checking, CASE, and STAY. The high rank of D-PRONOUN leads to "conditioned feature checking": case movement might apply for a different reason than the checking of the case feature.[2]

Such a reformulation of feature strength as constraint ranking has also been used in various OT accounts of *wh*-movement (cf. Grimshaw 1997, Ackema & Neeleman 1998, Legendre et al. 1998). The general picture that these accounts draw can be sketched as in (5).

[2] Note that Hans Broekhuis has recently revised his earlier account, adopting an approach in terms of "shape conservation". See the discussion in his excellent paper included in this volume, section 4.2.2.

(5) Simple economy-of-movement account of *wh*-fronting vs. *wh*-in-situ within OT:

a. CHECK-WH ≫ STAY yields *wh*-movement.

b. STAY ≫ CHECK-WH yields *wh*-in-situ.

One might object that this is hardly more than a reformulation of the minimalist approach. This even holds, e.g., in Ackema & Neeleman's (1998) account of multiple questions, as in (6-a):

(6) a. Who bought what?

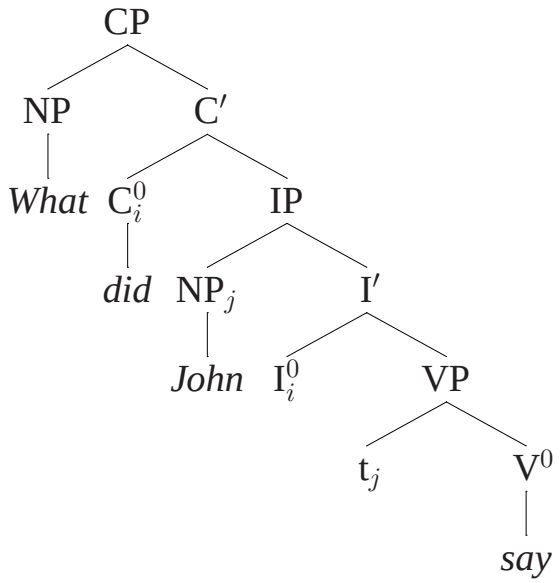
b. What did you buy?

Despite the fact that the *wh*-feature on '*what*' remains unchecked, and would have to be checked in a single question (6-b), (6-a) is grammatical. Traditional generative syntax had to invent complicated devices like *wh*-absorption to explain this. In minimalism, a solution suggests itself that exploits the distinction between the checker and the checkee of a formal feature: if the [+wh] feature on $C^0$ is strong, while that on the *wh*-phrase is weak, then we expect just one *wh*-phrase to be fronted. The OT approach by Ackema & Neeleman (1998) mimicks this by assuming a 3-constraint system, including STAY, Q-SCOPE (for the *wh*-phrase) and Q-MARKING (for the $C^0$ head).

## 1.2 Against Economy of Movement as a Violable Constraint

A reformulation of a minimalist analysis that works in OT terms is, of course, a good thing to do. However, it is not a very forceful argument in favour of OT. There are a few further objections to be made. First, it is typical of analyses like these that they silently take over background assumptions. One concern that I have is the question how to rule out a candidate structure like the following one:

(7) What did John say?




A violation of STAY can be avoided by simply inserting the *wh*-phrase directly in [Spec,CP]. This candidate fulfills both Q-MARKING and Q-SCOPE, hence it should be optimal even (wrongly) in in-situ languages.

In minimalism and its predecessors, structure (7) is usually ruled out by interpretive and case requirements: an NP is assigned its Θ-role inside VP, and uninterpretable otherwise. Likewise, case is assigned into that position, or another one designated for object case assignment, hence an NP inserted into [Spec, CP] has no case, or its case feature unchecked.

These options are not as straightforwardly applicable in OT. Among most varieties of OT syntax that are on the market, there is consensus at least with respect to one issue: **the input contains an argument structure specification**.

For this reason, an argument against the structure in (7) in terms of a violation of the Θ-criterion is much less forceful than in a purely derivational system: omitted merge into Θ-position does not lead to a loss of semantic information, if the latter is given in the input.

One principal difference between minimalism (and other purely derivational systems) and OT syntax is the construction of the interfaces between syntax on

the one hand, and semantics and phonology on the other. In the usual generative conception syntactic structures are fed into the semantic and phonological modules, which *interpret* the "instructions" the syntactic structure provides.

An OT conception of the interfaces brings syntactic, semantic and phonological/prosodic representations into *correspondence*. It organises their *mappings*. Semantic and phonological structures are generated independent of the syntactic structure, and they serve as candidates in an OT competition for the optimal syntax↔semantics and syntax↔phonology mappings.

Mapping requirements are typical candidates for violable OT constraints. Examples for constraints on syntax↔semantics mapping are the constraints D-PRONOUN, Q-SCOPE and Q-MARKING, mentioned above. Such constraints can easily come into conflict, and therefore imperfect mappings are expected to be the rule rather than the exception in OT.

Hence, from the logic of an OT model, it would be a mere stipulation to claim that a constraint like Θ-MARKING requiring arguments to be inserted in their Θ-position was inviolable and part of the generator.

A similar argument can be made with respect to case assignment: an NP might be faced with particular syntactic ordering constraints because it has a particular case, but not necessarily in order to receive case. It might bring its case, being a morphological property, already with it.

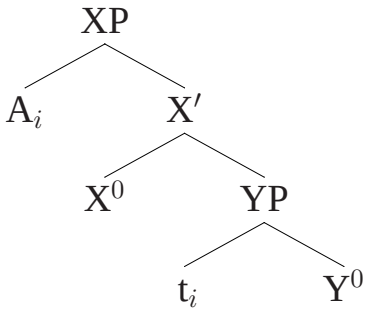
It is thus difficult to argue that candidate (7) is ruled out by Gen, as the inviolable principle supposed to hold in Gen can hardly be motivated. Hence, economy of movement cannot help us prevent the candidate in (7) from being optimal in in-situ languages. In other words, *wh*-in-situ does not equal absence of *wh*-movement.

I therefore want to propose that there is no place for constraints like STAY, neither in Eval, nor in Gen. Syntactic movement should be evaluated by its effects *only*. It is welcome if it helps fulfilling highly ranked constraints, and disadvantageous if it leads to their violation. But these constraints should not

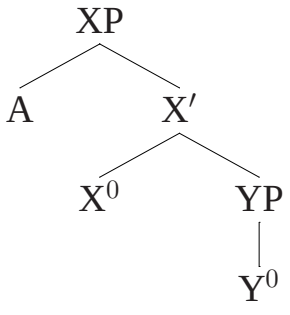
be about movement itself, but about the **syntactic consequences** of semantic, morphological and phonological relations among words and constituents, like, for instance, *wh*-phrase placement, syntactic conditions for case licensing and agreement, prosodic structuring etc. The impression that we have of syntax as being an economically designed system should be an emergent by-product of this, if anything.[3]

I want to emphasise that this does not imply the abandoning of syntactic movement per se. At this stage, there is no need to impose such a restriction on the generator. However, one conceptual issue might arise. Given that movement as such is not subject to wellformedness constraints, we might find a situation where two structurally different candidates have an identical constraint violation profile. The case I discussed aboce could be of this kind, or, more schematically, the following pair of trees:

(8) a.




b.




This situation would be an artefact of the way the generator is defined. It would not be an empirical issue in any sense. We are well-advised to avoid such candidate pairs for conceptual reasons. The question then would be which of the two trees should be given up. Whether we can really do without syntactic movement in the generator is, however, also an empirical issue which lies beyond the scope of this article.

[3] This is very much in line with recent proposals by Grimshaw (2001, 2006) though she takes a different avenue to fulfil this goal.

### 1.3 An alternative account of *wh*-movement in terms of syntax-semantics correspondence

I would like to propose an alternative account of the typology of *wh*-movement that does without economy of movement. It is based on the correspondence between semantics and syntax and can be sketched as in (9).

(9) Alternative OT account of *wh*-movement:

- An object *wh*-phrase as in "What did you say?" has a couple of semantic and morphological properties (*wh*-, case, $\theta$-role, a.o.) which are syntactically relevant.
- Assume that case position and $\Theta$-position are identical and that the former is dependent on the latter, therefore omissible here.
- Assume further that Q-SCOPE is essentially the demand to have an operator c-command its scope domain.
- To capture the *wh*-movement vs. *wh*-in-situ issue, it is not necessary to refer to economy of movement. Rather, we might postulate that the *wh*-item is in conflict between which of its semantic properties determines its position, [SCOPE] or [$\Theta$]. Assume two constraints, SCOPE-Pos, $\Theta$-Pos.

a. SCOPE-Pos $\gg$ $\Theta$-Pos derives *wh*-movement.
b. $\Theta$-Pos $\gg$ SCOPE-Pos derives *wh*-in-situ.

This is an explanation of the typological variation of *wh*-movement in terms of conflicting semantics$\leftrightarrow$syntax mapping demands (*wh*-scope, $\Theta$-role). It might be the conceptually stronger analysis in the sense that it also has something to say about the in-situ position.

Furthermore, I think this kind of approach has an empirical advantage. Note the following problem with Turkish:

> [. . . ] It should be noted that, although Turkish is an SOV language, the basic word order is overridden by various other factors. For example, the most unmarked position for a WH-element is to the immediate left of the verb, irrespective of the grammatical relation. The second-best alternative is for the WH-element to be placed in its original position; [. . . ]
> (Kornfilt 1997)

(10) a. *bu kitab-ı* ***kim*** *oku-du?*
this book-ACC who read-Past

b. ***kim*** *bu kitab-ı oku-du?*
who this book-ACC read-Past
"Who read this book?"

As the position left adjacent to the verb is the focus position in Turkish, it is easy to integrate Turkish into our alternative account, assuming that the *wh*-phrase bears focus:

(11) Constraint Ranking for Turkish:[4]
FOCUS-Pos ≫ Θ-Pos ≫ SCOPE-Pos

An analysis in terms of economy can be extended in the same way, of course. However, Turkish shows that the positioning of *wh*-items is not simply a matter of having *wh*-movement or not. The spirit of the STAY-based analysis is called into question.

The claim being made here is that the surface position of the *wh*-item is *always* determined by some semantic property, no matter which position it is. The *wh*-item bears several semantic properties with conflicting placement re-

[4] This assumes that (10-b) has focus on the direct object – an assumption that has been confirmed to me by Orhan Orgun, p.c.

quirements (Θ-role, scope, focus), and the conflict is resolved in the usual OT way.

## 1.4 Reinhart (1995): syntactic economy relativised by syntax-semantics interface needs

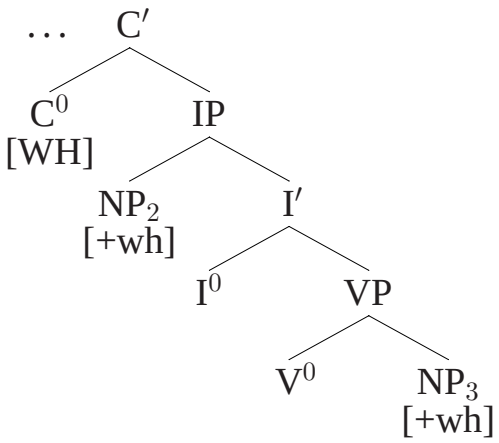
In this section, I would like to introduce another application of the OT model in terms of syntax↔semantics correspondence that I illustrated in the previous section. It deals with a problem that has been discussed by Reinhart (1995). She notes the following grammaticality contrast for English:

(12) a. *Bill$_1$ wonders what$_3$ who$_2$ bought.
b. Who$_1$ wonders what$_3$ who$_2$ bought?
c. Who$_1$ wonders what$_3$ Bill$_2$ bought?

This is a problem for economy of movement, as the order of the *wh*-items in the subordinate clause in (12-b) violates superiority, and hence it should be ruled out for the same reason as (12-a). But, surprisingly, the subordinate clause's subject NP does not induce a superiority violation here, just as in (12-c).

This observation about (12-b) is only correct, as long as the two embedded *wh*-phrases do not compete for the embedded [Spec,CP] position in (12-b). I.e., 'who$_2$' has matrix scope. This distinction is difficult to integrate into a minimalist analysis, if [WH] is treated as a purely formal syntactic feature:

(13)




The [WH] Comp of the embedded clause should attract the closest [+wh] element, which is $who_2$ in both (12-a,b). The main problem for the analysis lies in the fact that the [WH] Comp is blind for the semantic scope of the *wh*-elements it attracts.

Reinhart's solution relativises the Minimal Link Condition (MLC) to semantically equivalent syntactic structures. This interpretation of the MLC in terms of competition and blocking is already close to an OT account.

In the OT analysis in terms of semantics↔syntax correspondence presented here, Reinhart's idea can be implemented quite nicely. Assume that there is no formal [WH] feature, no attraction of such features, and no checking. Take the constraints SCOPE-Pos and Θ-Pos from above. Consider the following OT competition:

(14) input: Qxy [ x wonders Qz [y bought z ]]
Candidate structures:

a. *$Who_x$ wonders $who_y$ bought $what_z$
b. *$Who_y$ does $who_x$ wonder $what_z$ bought
c. √$Who_x$ wonders $what_z$ $who_y$ bought

The three candidates are Reinhart's examples in (12). The input specifies the reading where both the matrix subject and the embedded subject have matrix

scope. Which is the optimal syntactic structure for this reading?

(15) OT tableau for (12)-(14):

| Qxy [ x wonders Qz [y bought z ]] | SCOPE | Θ |
|---|---|---|
| (14-a) | ∗(y) ∗(z) | |
| (14-b) | ∗(x) | ∗(y)∗(z) |
| ☞(14-c) | ∗(y) | ∗(z) |

Structure (14-a) has two violations of SCOPE, because neither the embedded object nor the embedded subject occupy their scope positions. Structure (14-b) has only one violation of SCOPE, because the matrix subject *wh*-phrase remains in situ. However, both the embedded object and the embedded subject occupy their scope positions and therefore incur violations of Θ. The candidate in (14-c) exploits the fact that the matrix subject *wh*-phrase simultaneously satisfies both SCOPE and Θ in the same syntactic position. This gives this structure the advantage of having one violation of Θ less than (14-b), for the embedded *wh*-object, '*what*'. The only element that violates SCOPE is the embedded '*who*'. This is the optimal candidate.

(14-b) might even be worse under a definition of SCOPE that requires an operator to c-command the elements in its scope domain. This is not met, though $what_z$ is in the embedded [Spec,CP], because one element of this domain, $who_y$, has moved higher – such a definition of SCOPE is thus even able to derive *wh*-island effects.[5]

Let me summarise the claims I have made so far:

- Syntactic constraints should formulate placement requirements as consequence of particular semantic, morphological, or (perhaps) phonological properties of syntactic elements.

[5] I carried out this analysis in Vogel (to appear).

- Gen does not contain any checking operations.
- Consequently, the respective features are unnecessary.
  So, Gen simply consists of two operations, ...
  - Gen= MERGE $\alpha$+ MOVE $\alpha$

  ... plus a restriction on vacuous movement to avoid endless generation of output-equivalent structures.

Given this, it seems that the simple generator is the unconstrained, thus (hopefully not too) powerful generator – still including the possibility of syntactic movement. Note that this is very much in common with the OT principle "Richness of the Base": no constraints should be imposed on the generation of candidate structures. This (methodological) principle emphasises the role of Eval in OT in the effort to yield explanatory adequacy.

## 2 Syntactic Simplicity and Markedness

Both minimalism and Optimality Theory use meta-principles that are assumed to shape linguistic expressions. In minimalism, this principle is *economy*, both derivational and representational. Optimality Theory relies on the principle of *markedness*. I would like to discuss in this section how these two concepts relate.

OT's notion of markedness is close to the traditional understanding of this term in traditional linguistics. Typical claims about the differences between marked and unmarked versions of an expression are the following:

- The unmarked expression is typologically more frequent than the marked one.

- When a language has the marked expression, it also has the unmarked expression.

- In languages that have both the marked and the unmarked expression, the contexts in which the marked expression can occur build a proper subset of the contexts in which the unmarked expression can occur.

How does syntactic simplicity correlate with this traditional conception of markedness? Optimality Theory is good at modeling so-called "repair strategies". In phonology, this repair is typically the *neutralisation* of a marked feature, which happens under particular conditions, as, e.g., in German final devoicing – where syllable-final obstruents lose voice, e.g., /rad/ → [rat]:

(16) German final devoicing (after Wiese 1996)
[+ obstruent] → [– voice] /__ ]$_\sigma$

As we will see in the following section, *syntactic* repair strategies are not always the unmarked option, and the unmarked option is not always the structure that is in some sense less complex, i.e., less marked in the original sense. A further issue is the relationship between analytical and synthetic expressions. Sometimes, we use syntactic means in order to fill a 'morphological gap'. Are these syntactic means therefore less marked? And if so, why is the syntactic route often block, when the morphological route is available, and how can this all be integrated in a theory of syntactic markedness?

## 2.1 Optional and Obligatory Complementisers

A nice example for an unmarked-marked pair of two syntactic expressions are the two versions of English subordinate clauses, with and without complementiser, CP vs. IP. Interestingly, '*that*'-clauses, i.e. CPs, have to be seen as the unmarked option in the classical sense. The contexts where they are possible are a proper superset of those where the '*that*'-less (IP) variant is possible. For

instance, when the clause is fronted, only *that*-clauses are possible, while both forms are legitimate in the final position:

(17) a. I would never say John should leave
b. I would never say that John should leave
c. That John should leave, I would never say
d. *John should leave, I would never say

The complementiser becomes obligatory with the insertion of an adverbial preceding the subject (cf. Grimshaw 1997):

(18) a. *She swore/insisted/thought(,) most of the time(,) they accepted this solution.
b. She swore/insisted/thought that(,) most of the time(,) they accepted this solution.

The possibility of complementiser-less clauses is restricted to complements of so-called bridge verbs. Many verbs only allow for a clause with complementiser:

(19) a. I regret that John left
b. *I regret John left

Considerations about the economy of representation would suggest that the version with the complementiser is the marked option, because it has more structure. This is clearly not the case. We thus conclude that the grammatically unmarked form is not always the shortest (or literally unmarked) form. There is a discrepancy between economy of structure and syntactic markedness.

The complementiser can also be understood as a clausal marker for subordination. I.e., *that*-clauses are literally marked for subordination. This observation seems to stand in opposition to the traditional notion of markedness. However,

this is also a matter of perspective. If we see the two forms as possible variants of English clauses in general, we find that *that*-less clauses can serve as both main and subordinate clauses, while *that*-clauses can only serve as subordinate clauses. *That*-less clauses, from this perspective, have the wider distribution.

All of this suggests that, especially in syntax, expressions are not marked or unmarked as such. They count as (un)marked *for a particular purpose*:

(i) The unmarked main clause has no complementiser.
(ii) The unmarked subordinate clause has a complementiser.

We can nevertheless make the following two statements:

(iii) Subordinate clauses are more marked than main clauses.
(iv) Clauses with a complementiser are more complex than those without one.

The statements in (i) and (ii) can be interpreted as the result of the interaction of the two markedness tendencies expressed in (iii) and (iv). The latter statements can be reinterpreted as scales:[6]

(20) main clause $\prec$ subordinate clause
IP $\prec$ CP

By using the method of harmonic alignment, as established by Prince & Smolensky (1993, 2004), we can construct two universally fixed sub-rankings of constraints composed by aligning the two scales appropriately:

(21) a. *MainCl/CP $\gg$ *MainCl/IP
b. *SubCl/IP $\gg$ *SubCl/CP

It is universally more harmonic for a main clause not to have a complementiser, and for a subordinate clause to have one. The interleaving of these two subrankings is open to typological variation. For English, it is crucial that *MainCl/CP

[6] For ease of representation, I use the labels CP and IP for clauses with and without complementiser.

is ranked higher than all the other constraints, as this is the structure that never occurs.

As this analysis shows, economy of structure does indeed play a role, but perhaps not in a pure way, but only indirectly as part of a constraint subsystem that is derived by harmonic alignment. More complex structures are sometimes preferred, for instance in order to maintain a contrast.

This reminds of Horn's (1984) 'division of pragmatic labour', the observation that unmarked forms tend to be used for unmarked situations and marked forms for marked situations. When a pair of two forms stands in such a relation, the more general form will be blocked by the more specific one in a 'neutral' context. This is not the case with our two sentence types, but the next section will discuss a candidate for such an interaction, English *do*-support.

## 2.2 *Do*-support, Periphrasis, and Markedness

As we saw in the previous section, the decision which of two syntactic structures has to be considered as less marked, is not necessarily decided simply by considering structural complexity. This is also the case with the second example I would like to discuss, English *do*-support. Consider the following examples:

(22) a. John left.
b. *John did leave.
c. John DID leave.
d. John didn't leave. / *John left not.
e. Why did John leave? / *Why left John?

*Do*-support is the periphrastic version of a simple tense form, it alternates with the tense inflection on the verb. A couple of contexts make it obligatory – in (22), we have contrastive verum focus (22-c), negation (22-d), and non-subject questions (22-e). Which is the unmarked form, *do*-support or tense inflection?

If we follow the reasoning above, then the unmarked form is the one which is more widely applicable and which occurs especially in difficult environments. This is clearly the case with *do*-support. However, the unmarked expression should also be possible in an unproblematic environment. But as the judgement in (22-b) indicates, this is not the case.

These observations thus do not fit the theory of markedness in syntax that we developed thus far. I see two possible explanations for the odditiy of (22-b) which are in line with our theory of syntactic markedness:

(i) The non-acceptability of (22-b) is not an instance of syntactic illformedness, but due to pragmatic blocking.

(ii) (22-b) is well-formed, its low acceptability is due to a prescriptive norm within the speech community.

Explanation (i), pragmatic blocking, could rely on the theory of conventional implicatures, as founded by Grice (1975), and further developed, e.g., by Levinson (2000). It can happen that two semantically eqivalent forms stand in a scalar opposition. These scales are called Horn-scales after Horn (1984) who was the first to give a systematic account of such phenomena.

The example that Levinson has studied in detail is the English system of pronominal and anaphoric reference. The SELF-anaphora (*himself, herself, itself, myself* etc.) are nowadays the only option for a locally bound pronoun in English. But in Old High English, the simple pronouns *him, her, it* were still possible, i.e., ‘John shaved him’ could mean that John shaved himself. What has changed since then, according to Levinson, is the *conventionalization* of the scale ‘SELF-pronoun – pronoun’. This had the consequence that in contexts where the SELF pronoun is used, the simple pronoun is blocked.

The oddity of (22-b) could be seen as another instance of such a division of pragmatic labour. In general, I would like to propose, the synthetic form is preferred over the periphrastic form:

**Blocking of periphrastic forms** If two forms that differ only in whether they express a feature by a morpheme or by a function word, build a Horn-scale, then the form that uses the morpheme blocks the form that uses the function word.

It is striking that the syntactic structure of (22-b) is not unacceptable per se, but, as we see in (22-c), requires, or induces, an additional semantic feature, verum focus. This is in fact a precondition for the building of a Horn-scale: the forms involved in a Horn-scale are wellformed according to core grammatical criteria. Thus, *do*-support is syntactically wellformed, even in (22-b), but because of the division of pragmatic labour, its use induces a semantic contrast – if no such contrast is intended, the use of the dispreferred form is not justified.

While in Standard English the scale '*do*-support – morphological tense' is conventionalized, there exist English dialects which are in a state comparable to Old English in Levinson's example: they use *do*-support even in neutral environments. This has been reported by Kortmann (2002) for the southwest counties of England[7] where "unstressed *do* [occurs] as simple tense-carrier in affirmative sentences:

*We do breed our own cows. This man what do own this, . . .*

*We've been up milking at 6 o'clock in the morning, and then we did go on haymaking, . . . "*

Among German dialects, this phenomenon is even more widely spread, though also most German speakers will presumably agree that (23) is illformed as a Standard German sentence:

(23) ?**Maria tut schlafen*
M. does sleep

[7] Kortmann quotes Wakelin (1986), according to whom this region is mainly constituted by the counties of Cornwall, Devon, Somerset, South Avon, Wiltshire and Dorset, with East Cornwall, Devon and (West) Somerset forming its core.

(23) probably sounds to many Germans like child speech. Smaller Children use this construction quite frequently, just as their dialectal environment does. When children come to primary school, teachers spend much effort on driving them this habit out. So, for Standard German, a sociolinguistic explanation for the low acceptability of (23) seems plausible – it is the result of the exposition to prescriptive pressure at school.

## 2.3 Comparative Adjective Formation

The two versions of comparative adjective formation in English follow a pattern similar to *do*-support: short adjectives are formed with *-er*, those with 3+ syllables are built with *more*. The two options have nearly complementary distribution:

(24) a. easier, *more easy
b. *intelligenter, more intelligent
c. luckier, more lucky

Adjectives with two syllables are somewhat in between. Via a *Google* search, it is possible to find both versions for '*lucky*':

(25) a. http://www.omgclothing.com/score/36052/Liberals_are_luckier_in_love!
b. "How You Can Be More Lucky" (http://www.somethingyoushouldknow.net/transcript8_13_03.htm)

Periphrastic comparatives of '*easy*' can be found in coordinated adjectives:

(26) Periphrastric comparative adjectives with a disyllabic adjective:

a. "But then turn to an open source language, inspired by Unix shell programming, but, oh, so much more easy and powerful." (http://www.awaretek.com/programming.html)

b. "AOSell integrates with America Online software to make researching stocks with AOL more easy and productive." (http://www.softdepia.com/business_solutions_sub_155_1.html)

c. "Act for the more easy and speedy recovery of small debts, within the city of Rochester, and the parishes of Strood [etc] and the ville of Sheerness" (http://library.kent.ac.uk/library/special/html/specoll/acts.htm)

This can even be observed with monosyllabic adjectives:

(27) Periphrastic comparatives with coordinated a monosyllabic adjective:

a. "Just hope that the script kiddie graphic interface will be more nice and sober in the future." (forum.sysinternals.com/forum_posts.asp? TID=7003&PN=1&TPN=57)

b. "Being the North the poor area, the South the more nice and old area, with medium class all over it and some old rich people also." (geoimages.berkeley.edu/wwp904/html/AYRTON.html)

c. "I spent around thirty hours or so working on the Everything Engine, trying to refactor it into something a little more nice and usable." (www.oreillynet.com/onlamp/blog/2006/06/ refactoring_everything_retrosp.html)

Like in the case of *do*-support, periphrasis is an option the system can 'fall back' to in a non-trivial syntactic context. Although the expressions "easier and speedier" and "nicer and older" are available, the periphrastic "more easy and speedy" and "more nice and old" are not blocked anymore. Hence, in the context of our discussion about markedness we again notice that the periphrastic form, the '*more*'-comparative is the one that is more widely applicable, and, thus, should count as the less marked form, despite its being blocked in the case of small adjectives in unproblematic contexts.

In the absence of a morphological strategy, the periphrastic form is not even blocked in the simple cases. This can be seen with *less*-comparatives:

(28) a. "That's less nice. And we hope."
(www.aquinas.ac.uk/documents/download.asp?
nodeid=2631&libraryversionid=1719)

b. "A little less nice and a lot more nasty would have made Shallow Hal twice the film."
(www.totalfilm.com/cinema_reviews/shallow_hal)

c. "I had to make her a bit less nice and a bit more willing to make mistakes and get involved with people."
(fictionwriting.about.com/od/interviews/a/alixohlin_2.htm)

This is expected: without a Horn-scale, no pragmatic blocking can apply. If there was a genuinely morpho-phonological or morpho-syntactic constraint ruling out periphrastic comparatives with small adjectives, we would expect this constraint to also apply with the *less*-comparative. '*Less nice*' should be ill-formed. As we see, this is false. The illformedness of '*more nice*' in unproblematic contexts is thus indeed dependent on the existence of a morphological alternative – the two forms build a Horn-scale.

Summarising the discussion in the last two sections, we can state that from a purely formal perspective, periphrastic forms are less marked than synthetic forms, because they are more generally applicable. But whenever we have an alternation between morpheme and function word, and this relation has become conventionalised in the form of a Horn-scale, the less marked periphrastic form is blocked in neutral environments, due to the pinciple of the 'division of pragmatic labour'. However, this is an observation about language *use*, not about grammar in the narrow sense.

## 2.4 Agreement with first and Second Person in Relative Clauses

Thus far, the results of our discussion on the relation between markedness and structural simplicity showed that periphrastic forms are the less marked forms, i.e., those forms that are more widely applicable, and the last resort the system can fall back to under difficult circumstances. Thus, richer, more explicit structures are less marked than those which are more condensed.

However, this should not mean that structural richness is less marked in general. One example of a richer, but more marked structure that occurs only as repair form are resumptive pronouns in German relative clauses. German relative pronouns are marked for third person and agree with their head noun in the $\phi$-features person, number and gender:

(29) a. *Der Mann, der da steht ...*
the man-3SgMasc the-3SgMasc there stands

b. *Die Frau, die da steht ...*
the woman-3SgFem the-3SgFem there stands

But German lacks relative pronouns in first and second person. Using the third person relative pronoun alone leads to ill-formedness, especially when an appositive relative clause is extraposed (30-a,b). The structure is repaired by in-

serting a resumptive pronoun that bears the missing person features (30-c). This option is ruled out in third person (30-d).

(30) Relative pronoun agreement with first/second person in German:

a. **Ich gehe zu ihr, der sie am besten kennt.*
I go to her the-3SgNomMasc her at-the best knows-3Sg
"I'll go to her, who (i.e., me) knows her best."

b. **Ich gehe zu ihr, der sie am besten kenne.*
I go to her the-3SgNomMasc her at-the best know-1Sg

c. *Ich gehe zu ihr, der ich sie am besten kenne.*
I go to her the-3SgNomMasc I her at-the best know-1Sg

d. ?**Peter geht zu ihr, der er sie am besten kennt.*
P. goes to her the-3SgNomMasc he her at-the best knows-3Sg

e. *Peter geht zu ihr, der sie am besten kennt.*
P. goes to her the-3SgNomMasc her at-the best knows-3Sg

While (30-a,b) are clearly odd examples, (30-d) sounds first of all 'archaic', as if it stemmed from a Shakespeare translation. Nevertheless, leaving the resumptive pronoun out, as in (30-e) is clearly the preferred and fully acceptable option, and this strongly contrasts with (30-a,b).

Using such a resumptive pronoun is totally ruled out in restrictive relative clauses:

(31) **Ich kenne einen Mann, der er Maria kennt*
I know a man the-3SgNomMasc he M. knows
"I know a man who (he) knows Maria"

I conclude that the resumptive pronoun in (30-c) is a repair form that is invoked by agreement requirements. There is an agreement chain starting from the head noun of the relative pronoun, “Ich”, via the relative pronoun to the finite verb of the relative clause. Especially in order to avoid an agreement clash with the finite verb of the relative clause, the resumptive pronoun is required.

(30-c) is the syntactically more complex expression, but in this case it is also the more marked expression. It’s occurrence is restricted to cases like (30-c). There is also another important difference: while in all examples that we discussed we are dealing with function words that express a feature that could be expressed by a morpheme, the feature in this latter case is agreement, i.e., a purely formal property of the relative pronoun – of course, one that it is unable to express. In the other cases above, the expressed properties were tense and comparative, i.e., semantically relevant properties.

## 2.5 Summary

Let me briefly sum up the results of this section:

Periphrastic forms where a function word expresses a semantically relevant feature are less marked than their synthetic alternatives, because they have broader application. Their avoidance in unproblematic contexts is due to the division of pragmatic labour. There has been a considerable debate about the integration of these pragmatic aspects into optimality theory, especially in the context of bidirectional OT, see for instance the paper by Blutner (2001), and the collection by Blutner & Zeevat (2004). I sketched a bidirectional model of OT syntax that is able to capture relevant aspects of Horn’s division of pragmatic labour, as they are relevant for syntactic analyses, in (Vogel 2004*a*,*b*).

Clitic doubling, as we find it in the preceding section, is used to fulfil agreement requirements. It does not serve a semantic purpose in such a case, has an isolated range of application, and is therefore the marked option.

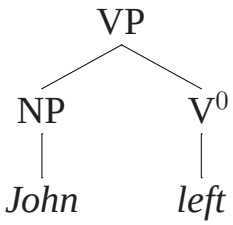
Structural economy in the strict sense seems to hold if function words are used to express a purely morpho-syntactic property like agreement, but not if they express semantically relevant properties like tense or comparative. Thus, it seems that the unmarked syntactic expressions are typically periphrastic constructions. However, empirically, this can be counterbalanced by the pragmatic constraints governing language use.

Unmarked syntactic expressions can be seen as standing in a balance between *compression* (synthetic constructions) and *redundancy* (clitic doubling).

## 3 Syntactic Simplicity and Syntax-Phonology Correspondence

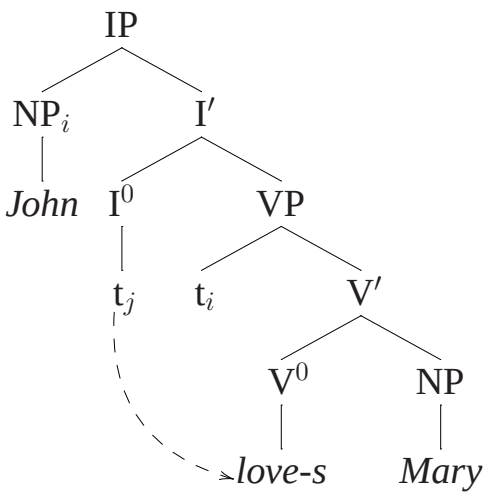
A convincing theory of syntax-prosody mapping requires that syntactic stipulation and structural idiosyncracies be reduced to a minimum. One noteworthy problem arises when we apply the theory of syntax-prosody mapping by Truckenbrodt (1999) to Grimshaw's (1997) account of the English verb phrase. In Grimshaw's system, English active clauses with simple tense are analysed as simple VPs:

(32)




The standard Chomskian apporach of the English main clause assumes that the inflectional affix of a finite verb is base generated under $I^0$ and then lowered to $V^0$ (cf. Chomsky 1981):

(33)




However, theories of syntax-prosody mapping make crucial use of the distinction between functional and lexical projections (Selkirk 1986, 1996, Truckenbrodt 1995, 1999, a.o.). Of particular importance is the *Lexical Category Condition*:

(34) **Lexical Category Condition (LCC)**
(Hale & Selkirk 1987; Truckenbrodt 1999)
Constraints relating syntactic and prosodic categories apply to lexical syntactic elements and their projections, but not to functional elements and their projections, or to empty syntactic elements and their projections.

The problem that arises when we put the things together is that Grimshaw's (1997) VP analysis for simple English active clauses renders Truckenbrodt's (1995, 1999) and Hale & Selkirk's (1987) otherwise very nice account of prosodic phrasing inapplicable to English.

In (Truckenbrodt 1995), the following two constraints are central for syntax-prosody mapping:

(35) **Wrap-XP** Each lexically headed XP is contained in a phonological phrase.

**Stress-XP** Each lexically headed XP must contain a phrasal stress.

As a consequence of the LCC, the relevant lexical XPs are VP and NP in (36):

(36) ( John )$_{PPh}$ ( left )$_{PPh}$ prosodic structure

a. [$_{IP}$ [$_{NP}$ John ] [$_{VP}$ left ] ] traditional analysis

b. [$_{VP}$ [$_{NP}$ John ] [$_{V^0}$ left ] ] analysis by Grimshaw (1997)

While the prosodic phrasing in (36) fulfils both Wrap-XP and Stress-XP under the syntactic analysis in (36-a), the one in (36-b) violates Wrap-XP for VP. The appropriate prosodic structure for (36-b) would be the wrong ( <u>John</u> left )$_{PPh}$ (underlining signals stress). Thus the theory of English syntax-prosody mapping might have to be refined, perhaps in counterintuitive ways. By the way, the same is true, if the structure is atomised into a number of functional projections. Already, if the verbal head leaves VP into some higher functional head, the consequence for prosodic phrasing might result in atomisation:

(37) Too many functional projections for syntax-prosody mapping:

a. [$_{IP}$ [$_{NP}$ John ] [$_{FuncP}$ loves [$_{VP}$ [$_{NP}$ Mary ] ] ] ]

b. ( John )$_{PPh}$ ( loves )$_{PPh}$ ( Mary )$_{PPh}$

c. [$_{IP}$ [$_{NP}$ John ] [$_{FuncP1}$ loves [$_{FuncP2}$ [$_{NP}$ Mary ] . . . ] ] ]

Certainly, this happens, when both V and the object NP move up to higher functional projections, as in (37-c).

Prosodic phrasing provides indirect evidence for syntactic structure. It is certainly true that a model of the syntax↔prosody mapping works better when syntactic analyses are as coherent, exceptionless, and surface-near as possible. The amount of hidden, ‘invisible’ structure should be reduced to a minimum, but not for the price of a loss of analytical coherence, as the discussion of Grimshaw’s (1997) VP-analysis in this section showed.

Traditional syntax models, generative or not, use maximally general descriptions of sentence patterns, very much like the 'S → NP VP' rule from early generative grammar for English sentences. Because of the generality of such patterns, introducing a different phrase structure rule for unmodified clauses in simple tenses like the one in (32) would mean an unnecessary complication, the introduction of new rule, where the old one was sufficient. The simplicity of such an analysis is only apparent. If our OT syntax model leads us to an analysis like (32), then it is quite likely that our model needs revision. In general, the more variance we introduce into our syntactic analyses, the more we have to take care of in our model of the syntax↔prosody mapping.

## 4 Summary

The starting point of my discussion was the shift of explanatory burden from Gen to Eval within OT. One consequence of this shift should lie in a simplification of the generator, compared to a purely derivational system like minimalism. I argued that OT's generator can indeed do without a couple of important ingredients of minimalist theory: features, feature strength, economy of derivation, and also, to a certain extent, economy of representation. Whether it can also do without syntactic movement, is an open issue.

I proposed a correspondence theoretic conception of OT syntax, where derivational economy is reduced and relativised to syntax↔semantics correspondence.

The concept of representational economy is also called into question from an empirical perspective: the syntactic structures that count as unmarked, according to typological and distributional criteria, often are not the 'shortest' ones. Syntactically unmarked structures are in balance between compression and redundancy.

Typically, periphrastic constructions are those with the broadest applicability. We further found that situations where periphrastic constructions are ruled

out have two characteristics: we have a syntactically unproblematic context, and a synthetic alternative is available. I argued that these cases should be treated as instances of the pragmatic blocking of the periphrastic form by the synthetic one. However, the (grammatical) well-formedness of the involved expressions is a prerequisite of such pragmatic blocking to apply.

In the final section, I focused on the syntax-phonology interface, especially the mapping between syntactic and prosodic constituents. The syntax↔prosody mapping in English provides another argument against a strict application of representational economy. For the theory of the syntax-phonology interface, it is more important to work with invariant syntactic structures, rather than using the shortest, simplest structure possible.

On the other hand, prosodic phrases are usually headed by lexical words. Functional categories play a prominent role in syntactic analyses, but they are nearly irrelevant for the syntax↔prosody mapping. The highly abstract syntactic structures that we can frequently observe in the current generative discourse, with a proliferation of elaborated hidden structures and derivations, leads to serious complications for the theory of the syntax-phonology interface. From that perspective, it is much better to follow the opposite route: in our assumptions about syntactic structures, we should avoid abstraction as much as possible, but, see above, use structures with maximal generality.

## Bibliography

Ackema, Peter & Ad Neeleman (1998). 'WHOT.' *In:* Barbosa et al. (1998), pp. 15–34.

Barbosa, Pilar, Danny Fox, Paul Hagstrom, Martha McGinnis, & David Pesetsky (eds.) (1998). *Is the best good enough? Optimality and competition in syntax*. MIT Press, Cambridge, Massachusetts.

Blutner, Reinhard (2001). 'Some aspects of optimality in natural language interpretation.' *Journal of Semantics* 17:189–216.

Blutner, Reinhard & Henk Zeevat (eds.) (2004). *Optimality Theory and Pragmatics*. Palgrave MacMillan, Houndmills, Basingstoke, Hampshire, England.

Broekhuis, Hans (2000). 'Aganist Feature Strength: The Case of Scandinavian Object Shift.' *Natural Language and Linguistic Theory* 18:673–721.

Chomsky, Noam (1981). *Lectures on Government and Binding*. Foris, Dordrecht.

— (1995). *The Minimalist Program*. MIT Press, Cambridge, Massachusetts.

Culicover, Peter W. & Ray Jackendoff (2005). *Simpler Syntax*. Oxford University Press, Oxford, New York.

Grice, H. Paul (1975). 'Logic and Conversation.' *In:* P. Cole & J. Morgan (eds.), 'Speech Acts,' vol. 3 of *Syntax and Semantics*, pp. 41–58. Academic Press, New York.

Grimshaw, Jane (1997). 'Projection, Heads, and Optimality.' *Linguistic Inquiry* 28:373–422.

— (2001). 'Economy of Structure in OT.' Rutgers Optimality Archive (ROA). URL: `http://roa.rutgers.edu/view.php3?id=479`

— (2006). 'Chains as Unfaithful Optima.' *In:* Eric Bakovic, John J. McCarthy, & Junko Ito (eds.), 'Wondering at the Natural Fecundity of Things: Essays in Honor of Alan Prince,' pp. 97–109. BookSurge Publishing, Charleston, South Carolina. Published online by the Linguistics Research Center, University of California at Santa Cruz.
URL: `http://repositories.cdlib.org/lrc/prince/6/`

Hale, Kenneth & Elisabeth Selkirk (1987). 'Government and tonal phrasing in Papago.' *Phonology Yearbook* 4:151–183.

Heck, Fabian & Gereon Müller (2000). 'Successive Cyclicity, Long-Distance Superiority, and Local Optimization.' *Proceedings of WCCFL* 19:218–231.

Holmberg, Anders (1999). 'Remarks on Holmberg's Generalization.' *Studia Linguistica* 53(1):1–39.

Horn, Lawrence R. (1984). 'Toward a new taxonomy for pragmatic inference: Q-based and R-based implicatures.' *In:* D. Schiffrin (ed.), 'Meaning, Form and Use in Context,' pp. 11–42. Georgetown University Press, Washington.

Kornfilt, Jaklin (1997). *Turkish*. Descriptive Grammmars. Routledge, London.

Kortmann, Bernd (2002). 'New prospects for the study of English dialect syntax: Impetus from syntactic theory and language typology.' *In:* Sjeff Barbiers, Leonie Cornips, & Susanne van der Kleij (eds.), 'Syntactic Microvariation,' pp. 185–213. Meertens Instituut, Amsterdam. Online Publication.
URL: `http://www.meertens.knaw.nl/projecten/sand/synmic/`

Legendre, Géraldine, Paul Smolensky, & Colin Wilson (1998). 'When is less more? Faithfulness and Minimal Links in WH-Chains.' *In:* Barbosa et al. (1998), pp. 249–289.

Levinson, Stephen C. (2000). *Presumptive Meanings. The theory of Generalized Conversational Implicature*. The MIT Press, Cambridge, Massachusetts.

McCarthy, John J. & Alan Prince (1995). 'Faithfulness and Reduplicative Identity.' *In:* Jill Beckman, Laura Walsh-Dickie, & Suzanne Urbanczyk (eds.), 'Papers in Optimality Theory,' vol. 18, pp. 249–384. UMass Occasional Papers in Linguistics, Amherst, Massachussetts.

Prince, Alan & Paul Smolensky (1993). 'Optimality Theory. Constraint Interaction in Generative Grammar.' Rutgers Optimality Archive: ROA-537. Published as Prince and Smolensky 2004.
URL: `http://roa.rutgers.edu/view.php3?roa=537`

— (2004). *Optimality Theory: Constraint Interaction in Generative Grammar*. Blackwell, Oxford.

Reinhart, Tanya (1995). 'Interface Strategies.' OTS Working Papers, University of Utrecht.

Selkirk, Elisabeth (1986). 'On derived domains in sentence phonology.' *Phonology Yearbook* 3:371–405.

— (1996). 'The Prosodic Structure of Function Words.' *In:* James Morgan & Katherine Demuth (eds.), 'Signal to Syntax: Bootstrapping from Speech to Grammar in Early Acquisition,' pp. 187–213. Lawrence Erlbaum Associates, Mahwah, New Jersey.

Truckenbrodt, Hubert (1995). *Phonological Phrases: Their Relation to Syntax, Focus, and Prominence*. Ph.D. thesis, MIT, Cambridge, Massachusetts.

— (1999). 'On the Relation between Syntactic Phrases and Phonological Phrases.' *Linguistic Inquiry* 30:219–255.

Vogel, Ralf (2004*a*). 'Correspondence in OT Syntax and Minimal Link Effects.' *In:* Arthur Stepanov, Gisbert Fanselow, & Ralf Vogel (eds.), 'Minimality Effects in Syntax,' pp. 401–441. Mouton de Gruyter, Berlin.

— (2004*b*). 'Remarks on the Architecture of Optimality Theoretic Syntax Grammars.' *In:* Reinhard Blutner & Henk Zeevat (eds.), 'Optimality Theory and Pragmatics,' pp. 211–227. Palgrave MacMillan, Houndmills, Basingstoke, Hampshire, England.

— (2006). ‘Weak Function Word Shift.’ *Linguistics* 44:1059–1093.

— (to appear). ‘Wh-Islands: A View from Correspondence Theory.’ *In:* Curt Rice (ed.), ‘Modelling Ungrammaticality in Optimality Theory,’ Equinox, London.

Wakelin, M. F. (1986). *The Southwest of England*. Benjamins, Amsterdam/Philadelphia.

Wiese, Richard (1996). *The Phonology of German*. Oxford University Press, Oxford.

Williams, Edwin (2003). *Representation Theory*. MIT Press, Cambridge MA.

*PD Dr. Ralf Vogel*
*Fakultät für Linguistik und Literaturwissenschaft*
*Universität Bielefeld*
*Postfach 10 01 31*
*D-33501 Bielefeld*

*Ralf.Vogel@Uni-Bielefeld.de*

*http://www.uni-bielefeld.de/~rvogel*