論　文

German verb phrase and noun phrase movement in Zone Theory

Thomas Michael Gross

要　旨

本文では，「言語と文化」ですでに紹介したゾーン説をまた取り上げる。ドイツ語の語順をどうやって記述できるかを論じる。特に，中心にしたところは，ドイツ語の動詞句と名詞句の組み立てで，動詞句と名詞句からどの部分を移動させることができることであった。

In my introductory paper on Zone Theory, I have explained the technical foundations for a dependency based description of word order. In a next step I want to show how this apparatus can be used in conjunction with some ideas borrowed from Optimality Theory in order to make some relevant predictions on word order. I shall repeat necessary definitions that have also been included in the above mentioned paper.

1. Principles of derivation

1.1. Source position

(D-1) Localizations of primary constituents or a commanding head in a base-structure are *source positions*.

1.2. Goal position

(D-2) Every localization of a primary constituent or a commanding head which is not a source position is a *goal position*.

1.3. Movement

(D-3) If a constituent C in a phrase P is in source position, but if C in a phrase Q, which consists of the same constituents, is in goal position, then C is considered as having *moved* from its source position in P to a goal position in Q.

1.4. Derivation

(D-4) If a constituent C has moved from its source position in a phrase P to a goal position in a phrase Q then Q is considered as having *derived* from P.

Please refer to the above mentioned paper for the definitions of the terms *base-structure*, *command*, *constituent*, *head*, *localization*, *phrase*, and *primary constituent*.

2.1. Description of *movement* based on concepts of Optimality Theory

Optimality Theory is a rather new framework that exhausts the idea that the notions *grammatical* and *ungrammatical* are not contrary terms, but that they rather constitute the opposite poles of a continuum dubbed *grammaticality*. For a long-term connoisseur of linguistic theories it provides the benefit of regarding grammaticality as a gradual phenomenon rather than a fixed category. In that way, structures are viewed as *more or less* grammatical, rather than *grammatical* or not. Furthermore, linguistic evolutionary theory has fostered the notion that languages adhere to economy principles. For instance, discontinuous structuring poses a wide range of problems in particular for syntax, as it is not easily described in terms of standard sentence structuring. However, discontinuous structures are used and — above all — are understood. Discontinuous structures are economic gambles against syntactic ordering principles governing the syntactic structure of verbal and written communication. It shows that sometimes continuous structures — although they are grammatical and in accordance to syntactic rules — are less well understood than their semantically equivalent discontinuous pendants. Therefore, discontinuous structures forfeit grammaticality in favor of comprehensibility. In linguistic terms, discontinuous structures are grammatically less optimal than their continuous pendants, but they are not ungrammatical. Standard syntactic theories have difficulties

grasping this crucial difference.

2.1.1. Principle of Optimality

The base-structure of a phrase P is the *optimal* localization of all constituents in P. Every derived phrase R is less optimal. Therefore, every derivation is a *violation* of localization principles of the base-structure. Violations can be expressed in terms of *parameters* and *hierarchies*.

2.1.2. Parameters

For derivations from a simple German base-structure with a verb, a subject, an object and a temporal adverb, the following parameters are necessary:

K! Parameter "K!" is a fusion of the parameters "K^1" and "K^n". "K^1" means that the head is localized *before or after the first* constituent. "K^n" means the head is localized *after the last* constituent.

"Anti!" means that the goal position of a phrase P of the close zone may *not* be localized *after* the head and *in front of the first* locus L_1 of the remote zone, if a constituent C is in source position in L_1.
Specific parameters that pertain to pronominalisation can recover violations against "Anti!". Example:

*Hat *einem Mann*$_i$ [das Mädchen$_{®}$] [[*i* $_{IO}$] [ein Buch$_{DO}$]$_{©}$] gegeben?
Hat *mir*$_i$ [das Mädchen$_{®}$] [[*i* $_{IO}$] [ein Buch$_{DO}$]$_{©}$] gegeben?

"Stay!" means that a constituent C stays in source position.

Every parameter must be violable.

2.1.3. Hierarchy

In German, "K!" ranks higher than "Anti!" and "Stay!". I.e. a violation against "K!" results in an unacceptable utterance. Since "K!" consists of "K^1" and "K^n", and since both parameters cover practically every possible localization, violations against "K!" are always fatal. However it is possible to get an acceptable utterance even if it violates *either* "K^1" or

"K^n", but not *both*.
"Anti!" ranks higher than "Stay!". A violation against "Anti!" results in an unacceptable utterance if no other parameters recover the violation.
"Stay!" can occur freely.

Figure 1: Parameter hierarchy for simple German base-structures

3. Example of a German base-structure

For a simple German base-structure such as (1) the structures (2–9) can be mechanically permutated, but not all of them are grammatical.

(1) …ich gestern meine Miete zahlte
(that)… I payed my rent yesterday
(2) zahlte ich gestern meine Miete?
(3) ich zahlte gestern meine Miete.
(4) gestern zahlte ich meine Miete.
(5) meine Miete zahlte ich gestern.
(6) ich zahlte meine Miete gestern.
(7) * ich gestern zahlte meine Miete.
(8) * gestern meine Miete zahlte ich.
(9) * zahlte meine Miete ich gestern?

Base-structure (1) serves as the base of derivation. First, the question (2) is derived from (1) by moving the verb from the right to the left periphery. (2) serves as a further derivational base for the sentences (3–5). In sentence (3), the subject is moved from source to goal position in front of the verb. In sentence (4), the adverb is moved from source to goal position in front of the verb. And in sentence (5), the object is moved from source to

goal position in front of the verb.
Sentence (3) is the base for sentence (6). In sentence (6) the object is moved from source to goal position in front of the remote zone.
The sentences (7–9) are ungrammatical. Sentences (7) and (8) violate "K1". Sentence (9) violates "Anti!" without recovery by a different parameter.
Please refer to the table below for structuring and violations:

No	Sentence	K!	Anti!	Stay!
(1)	… ich gestern meine Miete zahlte			
(2)	*zahlte*$_i$ ich gestern meine Miete *i*?			
(3)	*ich*$_j$ *zahlte*$_i$ [*j* gestern$_{®}$] meine Miete *i*.			*
(4)	*gestern*$_j$ *zahlte*$_i$ [ich $j_{®}$] meine Miete *i*.			*
(5)	*Meine Miete*$_j$ *zahlte*$_i$ ich gestern [$j_{©}$] *i*.			*
(6)	*ich*$_j$ *zahlte*$_i$ *meine Miete*$_k$ [*j* gestern$_{®}$] [$k_{©}$] *i*.			**
(7)	* *ich gestern*$_j$ *zahlte*$_i$ [$j_{®}$] meine Miete *i*.	*!		**
(8)	* *gestern*$_k$ *meine Miete*$_j$ *zahlte*$_i$ [ich $k_{®}$] [$j_{©}$] *i*.	*!		**
(9)	* *zahlte*$_i$ *meine Miete*$_j$ ich gestern [$j_{©}$] *i*?		*!	*

Table 1: Structuring and violations in the sentences (1–9)

4. "Partial verb phrase fronting" in German

German like English and other Germanic languages uses periphrastic tenses and modi. Therefore, sentences with very complex verb phrases are quite common. These complex verb phrases can consist of multiple verbs of which some are able to command other phrases such as noun phrases etc. Some but not all elements of these complex verb phrases can be *fronted*, i.e. moved to initial position in the sentence. Which elements and how many of them can be moved at the same time is the problem addressed in this section.
As a starter I will choose a sentence with the head in initial position, i.e. a question:

(10) habe ich ihn Reis essen lassen?
Did I let him eat rice?

Besides the remote zone *ich*, the head *habe* also commands the very complex close zone *ihn Reis essen lassen*. This complex consists of the head *lassen* which commands a close zone with two loci: *ihn* and *Reis essen*. The second locus consists again of a head *essen* and a close zone *Reis*.

Partial verb phrase fronting is a phenomenon where verbal heads of the main close zone are moved into initial position, sometimes together with zones they command. Since the main close zone consists of multiple embedded heads, there is the possibility to move *one* head, *multiple* heads and/or whole zones or loci. Single or sequential head movement is in principle possible and unproblematic.

Two parameters are necessary:

P! If two or more constituents are moved beyond the head of the matrix phrase, then the source positions of these constituents may not both be *peripheral* in the close zone that is commanded by the head of the matrix phrase.

Z! Two or more constituents of zones or loci that are not themselves heads may not be moved beyond the head of the matrix phrase without their heads.

The permutations of sentence (10) are shown below:

(11) Lassen habe ich ihn Reis essen.
(12) Essen habe ich ihn Reis lassen.
(13) Essen lassen habe ich ihn Reis.
(14) Ihn Reis essen lassen habe ich.
(15) Reis essen habe ich ihn lassen.
(16) Reis essen lassen habe ich ihn.
(17) * Ihn Reis lassen habe ich essen.
(18) * Ihn essen lassen habe ich Reis.
(19) * Ihn lassen habe ich Reis essen.
(20) * Ihn Reis habe ich essen lassen.

In sentence (11) *lassen* is fronted, and in sentence (12) *essen*. Since both are heads, their

movement is unproblematic. In sentence (13), both *lassen* and *essen* are moved as a complex of heads. This movement is considered problematic in various frameworks, but in Zone Theory is does not violate any criteria. The movement of the matrix close zone in sentence (14) is again unproblematic. In sentence (15), *essen* is moved together with its close zone *Reis*. In sentence (16), *lassen* is moved together with one locus of its close zone, namely *Reis essen*.

Sentences (17–20) are fatally violated. In sentence (17), the close zone *Reis* is moved without its head, and *ihn* and *lassen* have peripheral source positions in the base-structure. In sentence (18) and (19), the peripheral source positions of *ihn* and *lassen* violate parameter "P!". In sentence (20), close zone elements that are not heads are moved without their heads, which constitutes a violation against parameter "Z!".

Please refer to the table below for structuring and violations:

No	Sentences	P!	Z!
(11)	*Lassen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] essen $_{L2}$] $i_{©}$]		
(12)	*Essen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] i $_{L2}$] lassen$_{©}$]		
(13)	*Essen*$_j$ *lassen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] j $_{L2}$] $i_{©}$]		
(14)	*Ihn Reis essen lassen*$_i$ habe ich [$i_{©}$]		
(15)	*Reis essen*$_i$ habe ich [[ihn$_{L1}$] [i $_{L2}$] lassen$_{©}$]		
(16)	*Reis essen*$_j$ *lassen*$_i$ habe ich [[ihn$_{L1}$] [j $_{L2}$] $i_{©}$]		
(17)	* *Ihn Reis lassen* habe ich essen	*!	*
(18)	* *Ihn essen lassen* habe ich Reis	*!	
(19)	* *Ihn lassen* habe ich Reis essen	*!	
(20)	* *Ihn Reis* habe ich essen lassen		*!

Table 2: Structuring and violations in the sentences (11–20)

5. "Head fronting" in German

With respect to complex verb phrases such as the ones analyzed above, a particular case has to be considered. If a modal verb occurs in the complex verb phrase, then the head of the matrix phrase must be localized in a goal position that violates parameter "K!". Violations against parameter "K!" are recovered by two further parameters:

I! If there is a series of infinite heads $X^1 \ldots X^n$, and X^1 is a direct successor of X^2, X^2 a direct successor of X^3 asf., and X^n is the head of a primary constituent and a direct successor of a finite head K, then K *may* be moved directly in front of X^1.

M! If there is a series of infinite heads $X^1 \ldots X^n$, and X^1 is a direct successor of X^2, X^2 a direct successor of X^3 asf., and X^n is the head of a primary constituent, a modal verb, and a direct successor of a finite head K, then K *must* be moved directly in front of X^1.

The following parameter priority exists: “M!” ranks higher than “I!”, “I!” ranks higher than “K!”.
The starting sentence is

(21) dass ich ihn Reis essen lassen habe
that I have let him eat rice.

Permutations of sentence (21) are shown below:

(22) dass ich ihn Reis habe essen lassen
(23) * dass ich ihn Reis essen habe lassen
(24) * dass ich ihn habe Reis essen lassen
(25) * dass ich habe ihn Reis essen lassen
(26) * dass ich den Brief schreiben müssen habe
(27) dass ich den Brief habe schreiben müssen
(28) * dass ich den Brief schreiben habe müssen
(29) * dass ich habe den Brief schreiben müssen

Sentence (21) is the starter. In sentence (22), the head *habe* is moved in front of the heads *essen* and *lassen*, which is permissible according to parameter “I!” since it recovers the violation of “K!”. In the sentences (23–25), the goal position of *habe* violates both “K!” and “I!”; therefore they are fatal. Sentence (26) should correct, but it is not because *müssen* is a modal verb, and therefore parameter “M!” must hold. However, it is violated resulting in a fatality. In sentence (27), the head *habe* has been moved in front of the other verbal heads

as “M!” demands. In the sentences (28) and (29), “M!” is again violated.
Refer to the table below for structuring and violations:

No	Sentences	M!	I!	K!
(21)	dass ich [[ihn$_{L1}$] [[Reis] essen $_{L2}$] lassen$_{©}$] habe			
(22)	dass ich [[ihn$_{L1}$] [[Reis] *habe$_i$* essen $_{L2}$] lassen$_{©}$] *i*		+	*
(23)	* dass ich [[ihn$_{L1}$] [[Reis] essen $_{L2}$] *habe$_i$* lassen$_{©}$] *i*		*!	*
(24)	* dass ich [[ihn$_{L1}$] *habe$_i$* [[Reis] essen $_{L2}$] lassen$_{©}$] *i*		*!	*
(25)	* dass ich *habe$_i$* [[ihn$_{L1}$] [[Reis] essen $_{L2}$] lassen$_{©}$] *i*		*!	*
(26)	* dass ich [[[den Brief$_{©}$] schreiben$_{©}$] müssen$_{©}$] habe	*!		
(27)	dass ich [[[den Brief$_{©}$] *habe$_i$* schreiben$_{©}$] müssen$_{©}$] *i*	+	+	*
(28)	* dass ich [[[den Brief$_{©}$] schreiben$_{©}$] *habe$_i$* müssen$_{©}$] *i*	*!	*	*
(29)	* dass ich *habe$_i$* [[[den Brief$_{©}$] schreiben$_{©}$] müssen$_{©}$] *i*	*!	*	*

Table 3: Structuring and violations in the sentences (21–29)

6. Movements out of noun phrases

Elements can not only be moved out of verb phrases, but also out of noun phrases. The parameter “P!” accounts for some of the movements. But movements out of noun phrases are other than movements out of verb phrases, movements out of cycles. Furthermore, there is the particular case that a locus of the nominal close zone is moved together with the nominal head, and a further locus remains in source position. Therefore parameter “Z!” must be reformulated for movements out of noun phrases:

> Zn! A nominal head may only be moved beyond the head of the matrix phrase by itself or with a constituent which in source position is either directly governed by or directly dependent on the nominal head. In any other case, the nominal head must be moved with all its commanded zones and loci.

As a starter I will choose the following sentence:

(30) habe ich die grünen Schlangen gesehen?

Did I see the green snakes?

The relevant permutations are shown below:

(31) die grünen Schlangen habe ich gesehen.
(32) Schlangen habe ich die grünen gesehen.
(33) * die grünen habe ich Schlangen gesehen.
(34) * die Schlangen habe ich grünen gesehen.
(35) grüne Schlangen habe ich die gesehen.
(36) * grünen Schlangen habe ich die gesehen.
(37) giftige Schlangen habe ich die grünen gesehen.
(38) * giftigen Schlangen habe ich die grünen gesehen.

The question (30) is the base from which the sentences (31–38) have been derived. In sentence (31), the whole noun phrase has been moved. In sentence (32), only the nominal head has been moved. In sentence (33), the zones have been moved without their head which is a violation of parameter "Zn!". In sentence (34), elements have been moved that have peripheral source positions which is a violation of parameter "P!". In sentence (35) the moved head governs its moved zone directly, therefore there is no violation of "Zn!". However, in sentence (36), direct government does not exist, resulting in a fatal structure. In the sentences (37) and (38), a further adjective has been included, and (37) is correct because it corresponds to sentence (35), and (38) is incorrect because it corresponds to (36). Refer to the table below for structuring and violations:

No	Sentences	P!	Zn!
(31)	*die grünen Schlangen*$_i$ habe ich [$i_{©}$] gesehen		
(32)	*Schlangen*$_i$ habe ich [[die grünen] $i_{©}$] gesehen		
(33)	* *die grünen*$_i$ habe ich [[i] Schlangen$_{©}$] gesehen		*!
(34)	* *die Schlangen*$_i$ habe ich [[grünen] $i_{©}$] gesehen	*!	
(35)	*grüne Schlangen*$_i$ habe ich [[die] $i_{©}$] gesehen		
(36)	* *grünen Schlangen*$_i$ habe ich [[die] $i_{©}$] gesehen		*!
(37)	*giftige Schlangen*$_i$ habe ich [[die grünen] $i_{©}$] gesehen		
(38)	* *giftigen Schlangen*$_i$ habe ich [[die grünen] $i_{©}$] gesehen		*!

Table 4: Structuring and violations in the sentences (31–38)

7. Implications

The application of some core concepts of Optimality Theory invites some deliberation on the concept of syntactic grammaticality as was raised in the section on Optimality Theory. The analyses in sections 3–6 were mostly concerned with establishing the poles of the grammaticality continuum. However, there is more that can be said.
Reconsider the sentences (1–6), given below as (39–40). These sentence were all very close to the pole *grammatical* of the continuum, but they are not equally close.

(39) …ich gestern meine Miete zahlte
(40) zahlte ich gestern meine Miete?
(41) ich zahlte gestern meine Miete.
(42) gestern zahlte ich meine Miete.
(43) meine Miete zahlte ich gestern.
(44) ich zahlte meine Miete gestern.

Since the basic idea of Optimality Theory is the assumption that the more nonfatal violations are exhibited by a certain structure, it is possible to simply count the instances of violations. Refer to the table below:

No	Sentences	Stay!
(39)	…ich gestern meine Miete zahlte	
(40)	*zahlte*$_i$ ich gestern meine Miete *i*?	*
(41)	*ich*$_j$ *zahlte*$_i$ [*j* gestern$_{®}$] meine Miete *i*.	**
(42)	*gestern*$_j$ *zahlte*$_i$ [ich $j_{®}$] meine Miete *i*.	**
(43)	*Meine Miete*$_j$ *zahlte*$_i$ ich gestern [$j_{©}$] *i*.	**
(44)	*ich*$_j$ *zahlte*$_i$ *meine Miete*$_k$ [*j* gestern$_{®}$] [$k_{©}$] *i*.	***

Table 5: Structuring and violations in the sentences (39–44)

Because (39) is the base-structure, and because the base-structure is by pure definition optimal, no violations have occurred in (39). However, in order to derive a simple question from (39), as was done in sentence (40), the verb had to be moved from its final source

position to an initial goal position. This movement constitutes a violation of the parameter "Stay!", but this kind of violation is not fatal. But it also means that — by definition — sentence (40) is less optimal than sentence (39). Although, sentence (40) is better *adapted* to being a question than sentence (39), it is less optimally organized in terms of syntax. Very much like a discontinuous structure, sentence (40) gambles a communicative function that cannot be properly expressed syntactically by sentence (39) against syntactical integrity. In terms of syntactic construction, sentence (40) is therefore slightly less grammatical than sentence (39), *although* it serves its implicated communicative function much better than sentence (39).

The analogue is true for the sentences (41–43). All these sentences share the feature that two constituents have violated the parameter "Stay!" twice. The sentences (41–43) are therefore slightly less grammatical than sentence (40), and they are to a larger increment less grammatical than sentence (39). But again, there is a communicative gamble. Although the sentences (41–43) are much less grammatical than sentences (39) and (40), they are much better adapted at being main-clauses than (39) and (40). However, they are not equally well adapted to the same context. Since there are three constituents besides the verb, three wh-questions are possible:

(45) Was zahltest du gestern?
What did you pay yesterday?

(46) Wer zahlte gestern seine Miete?
Who paid the rent yesterday?

(47) Wann zahltest du deine Miete?
When did you pay your rent yesterday?

Wh-questions open foci in their answers. Since the questions (45–47) ask about different constituents, they open different foci in their possible answers. Disregarding prominence — because it is not a syntactic mechanism — the concept pair *topic—focus* is much as the notion of grammaticality not a categorical notion but a continuum. Topic positions are initial positions in a structure because it makes sense to bring old or known information *before* new information is brought up. Conversely, focus positions cluster around the end of a structure.

Question (45) asks about the object. The sentences (41) and (42) are well equipped as

answers because they both have the object in a focus position. It seems that sentence (41) is slightly better equipped than sentence (42) because it displays a less different word order than (42). However, in sentence (43), the object is in a topic position, and thus (43) is less well equipped as an answer to question (45).

Question (46) asks about the subject. The sentences (42) and (43) are well equipped as answers because their subjects have not moved to a topic position. Again it seems that sentence (42) is slightly better equipped than sentence (43) because it displays a less different word order than (43). However, in sentence (41), the subject is in topic position, and thus (41) is not the best answer to question (46).

Question (47) asks about the time when the rent was paid. Sentence (43) is the best answer, because the object has moved to the topic position, thus opening a focus position for the temporal adverb. Sentence (41) is the next best answer because the adverb has not moved. The least best answer of the sentences (41–43) is sentence (42) because the adverb is in topic position.

These deliberations allow the formulation of two new parameters:

Foc! means the constituent asked about is in focus position

Q=A! means the word order of the answer is equal to the word order of the question

Refer to the table below for adaptedness concerning the questions (45–47):

No	Questions	Answers	Foc!	Q=A!
(45)	was zahltest du gestern?	(41)		
		(42)		*
		(43)	*	*
(46)	wer zahlte gestern seine Miete?	(42)		
		(43)		*
		(41)	*	*
(47)	wann zahltest du gestern deine Miete?	(43)		*
		(41)	*	
		(42)	*	*

Table 6: Adaptedness of the sentences (41–43) to the questions (45–47)

Finally, sentence (44) seems to be the least optimal structure because it displays more violations against "Stay!" than any other structure. This assumption is corroborated by the fact that the adverb *gestern* needs to have at least some stress.

As similar train of thought should hold for the correct sentences (11–16), given below as (48–53).

(48) Lassen habe ich ihn Reis essen.
(49) Essen habe ich ihn Reis lassen.
(50) Essen lassen habe ich ihn Reis.
(51) Ihn Reis essen lassen habe ich.
(52) Reis essen habe ich ihn lassen.
(53) Reis essen lassen habe ich ihn.

Refer to the table below for violations of the parameter "Stay!":

No	Sentences	Stay!
(48)	*Lassen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] essen $_{L2}$] $i_{©}$]	*
(49)	*Essen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] i $_{L2}$] lassen$_{©}$]	*
(50)	*Essen*$_j$ *lassen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] j $_{L2}$] $i_{©}$]	**
(51)	*Ihn Reis essen lassen*$_i$ habe ich [$i_{©}$]	*
(52)	*Reis essen*$_i$ habe ich [[ihn$_{L1}$] [i $_{L2}$] lassen$_{©}$]	*
(53)	*Reis essen*$_j$ *lassen*$_i$ habe ich [[ihn$_{L1}$] [j $_{L2}$] $i_{©}$]	**

Table 7: "Stay!" violations in the sentences (48–53)

As can be seen in table 7, the sentences (50) and (53) violate the parameter "Stay!" twice, while the other sentences only violate it once. That means that (50) and (53) are slightly less optimal than the sentences (48), (49), (51), and (52). However, these sentences—although they all violate "Stay!" only once—are not equally optimal. Clearly, sentence (51) is best because a constituent has been moved without stranding parts of it. This is not the case in the sentences (48), (49) and (52) because there elements are stranded in source position. Of these, sentence (48) is possibly best because the head of the close

zone has been moved which is also in a peripheral source position in the close zone. Next should be sentence (49), because a head has been moved, but not on in peripheral source position. Last should be sentence (52) because it leaves elements in peripheral source position.
Two new parameters can be introduced that capture the differences:

PSP! means that the moved constituent has a peripheral source position.
Strand! means that the moved constituent leaves elements commanded by an element of the moved constituent stranded in source position.

Refer to the table below for “Stay!”, “PSP!” and “Strand!” violations:

No	Sentences	Stay!	PSP!	Strand!
(51)	*Ihn Reis essen lassen*$_i$ habe ich [$i_{©}$]	*		
(48)	*Lassen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] essen $_{L2}$] $i_{©}$]	*		*
(52)	*Reis essen*$_i$ habe ich [[ihn$_{L1}$] [i $_{L2}$] lassen$_{©}$]	*	*	
(49)	*Essen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] i $_{L2}$] lassen$_{©}$]	*	*	*
(53)	*Reis essen*$_j$ *lassen*$_i$ habe ich [[ihn$_{L1}$] [j $_{L2}$] $i_{©}$]	**	*	*
(50)	*Essen*$_j$ *lassen*$_i$ habe ich [[ihn$_{L1}$] [[Reis] j $_{L2}$] $i_{©}$]	**	**	**

Table 8: Violations in the sentences (48–53)

The sequence of the sentences (48–53) in table 8 has been adjusted in accordance with their optimality. It shows that sentence (51) is best because it displays only a “Stay!” violation. Sentence (48) is slightly less optimal because it leaves elements stranded. Sentence (52) does leave elements stranded in source position, but these elements are not commanded by it. However, the moved constituent does not have a peripheral source position itself, thus violating “PSP!”. Sentence (49) is least best of those sentences with a single “Stay!” violation because it violates “PSP!” and “Strand!”.

Of those sentences with double “Stay!” violations, sentence (53) is better than (50) because it only violates “PSP!” and “Strand!” once. Sentence (53) is the compound of the violations in sentence (48) and (52). With two double violations of “PSP!” and “Strand!”, sentence

(50) is the least best option.

The parameter “Strand!” also accounts for different optimalities of the sentences (31), (32), and (35), given below again as (54–56):

(54)　die grünen Schlangen habe ich gesehen.
(55)　Schlangen habe ich die grünen gesehen.
(56)　grüne Schlangen habe ich die gesehen.

In sentence (54), the whole noun phrase has been moved. In sentence (55), only the head has been moved, leaving two zones stranded. In sentence (56), only the remote zone is stranded but the adjective from the close zone now in initial position becomes susceptible to a violation of parameter “Zn!”. In sentence (55), the parameter “Zn!” is not applicable because the adjective has not moved. Therefore, (56) is slightly less optimal than (55) because it invites a further possibility for violating a parameter.
Refer to the table below for “Strand!” violations:

No	Sentences	Strand!
(54)	*die grünen Schlangen*$_i$ habe ich [$i_{©}$] gesehen	
(55)	*Schlangen*$_i$ habe ich [[die grünen] $i_{©}$] gesehen	*
(56)	*grüne Schlangen*$_i$ habe ich [[die] $i_{©}$] gesehen	*

Table 9: Structuring and violations in the sentences (54–56)

8. Conclusions

In this paper I have described the workings of an applied idea proposed by Optimality Theory. Grammaticality is not a clear-cut concept, but rather a continuum, where structures can cluster around one end of the continuum and still being gradually different in terms of grammaticality. I have shown this by giving examples of a simple German base-structure, and of complex verb phrases and noun phrases.
In discussing implications I have shown that the proposed idea offers valuable insights concerning the problem of word order and movement addressed in this paper.

Literature:

Archangeli, Diana & Langendoen, D. Terence (eds.): Optimality Theory: An Overview. Malden, Mass. & Oxford: Blackwell Publishers Inc. 1997.

Gross, Thomas Michael (1999a): Theoretical Foundations of Dependency Syntax. Iudicium Verlag: München.

Gross, Thomas Michael (1999b): Zonentheorie: Dependentielle Wortstellungstheorie. Aichi University: Faculty of Letters: Bungaku Ronsô 120. p170–159.