Free Word Order, Morphological Case, and Sympathy Theory

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Abstract

In this paper, I address the relation between scrambling and morphological Case from an optimality-theoretic perspective. Based on empirical evidence from German, Russian, and Bulgarian, and conceptual evidence involving issues of parametrization, I give arguments against the traditional view that scrambling presupposes morphological Case. The remaining two options are (a) and (b). (a) There is no synchronically relevant relation between scrambling and morphological Case. (b) Morphological Case does in fact presuppose scrambling. I pursue the latter, more radical approach, which implies that morphological Case is not given pre-syntactically (i.e., is not part of the syntactic input), but arises in the syntax. The presence of morphological Case is forced by a constraint that requires a Case marker on scrambled items (i.e., items at the left edge of vP); but morphological Case violates a DEP constraint. The main problem with such an approach turns out to be that morphological Case in languages like German and Russian may show up on an NP even if this NP has not undergone scrambling; in other words: the local property of a given sentence to exhibit morphological Case on its NPs is tied not to the local property of actual scrambling in that sentence, but rather to the global property that the language permits scrambling in minimally different sentences. In order to solve this problem, I develop an approach in terms of sympathy theory (McCarthy (1999)) according to which morphological Case can arise on an NP in situ without actual scrambling, because of a ☼-constraint that demands faithfulness to a competitor that does involve scrambling (and, hence, bear morphological Case).

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1. Introduction

This paper addresses the question of whether there is a correlation between free word order and morphological Case, and what such a correlation might look like. I will consider three hypotheses.

(1) a. If a language has free word order, it also has morphological Case.
b. If a language has morphological Case, it also has free word order.
c. Free word order and morphological Case are unrelated.

According to (1-a), the existence of morphological Case is a prerequisite for free word order in a given language.[1] This hypothesis can arguably be viewed as the standard assumption. It lends itself to a simple functional explanation (see., e.g., Comrie (1981) and Haspelmath (2000)) that can be summarized as follows: A proper interpretation of sentences requires an unambiguous identification of the grammatical function of an argument NP. The grammatical function of an NP can be encoded by morphological Case or by assigning it an invariant structural position. If the first option is available, an argument NP does not have to occupy a fixed position in order for its grammatical function to be identified; however, if there is no morphological Case, a language must resort to an invariant position to ensure that an identification of the grammatical function of an NP is possible. This functional explanation has often been implemented in analyses in the principles and parameters approach. It is compatible both with analyses in which free word order results from the option of variable base generation, and with analyses that account for free word order in terms of scrambling; see, e.g., Haider (1988) for a base generation account that relies on (1-a), and Fanselow (1992), Roberts (1997), and Weerman (1997) for scrambling accounts that incorporate (1-a).

In contrast, (1-b) states that free word order is a prerequisite for morphological Case. This hypothesis has received considerably less attention. Evidently, the two hypotheses make different predictions. (1-a) predicts that there is no language that has free word order, but no morphological Case; (1-b) predicts that there is no language that has morphological Case but no free word order. Finally, (1-c) states that (at least synchronically) there is no linguistically

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[1] Here and in what follows, I abstract away from the possibility that NP-V agreement may serve a similar function as morphological Case; see Baker (1996). However, most of what is said below would probably be compatible with replacing the notion of "morphological Case" with the more general concept of "morphological Case or agreement."

significant correlation between free word order and morphological Case; consequently, no prediction is made that could be empirically falsified.[2]

In what follows, I would like to argue that (1-a) should be rejected. As for the remaining two hypotheses, (1-c) may eventually prove to be the correct one. Still, what I want to do here is pursue (1-b), a more radical hypothesis that strikes me as worth investigating, even though it will turn out not to be entirely unproblematic. Throughout, I will adopt an optimality-theoretic approach. I will do so for two reasons: First, an optimality-theoretic approach will be shown to be hard to reconcile with (1-a); arguably, this can be taken to show that (1-a) reflects some deeper conceptual problems. And second, optimality theory turns out to offer a solution to what I take to be the most pressing problem that arises under (1-b); this solution will crucially rely on the notion of sympathy (see McCarthy (1999)).

Before I turn to these two issues, a few remarks are in order concerning the derivation of free word order structures. I assume that free word order is derived by a syntactic scrambling operation, not by base generation (be it accompanied by LF lowering, as in Bošković & Takahashi (1998), by LF raising, as in Fanselow (2001), or by no LF movement at all, as in Haider (1988)). Furthermore, I assume that scrambling is typically movement to an outer specifier of vP, in the sense of Chomsky (2000; 2001). Scrambling of an accusative NP to an outer Specv position in front of a nominative NP (that is base-generated in the inner Specv position) is shown for German in (2-b) vs. (2-a), and for Russian in (3-b) vs. (3-a).

(2) a. dass [$_{vP}$ der Astronaut$_1$ den Planeten$_2$ entdeckt] hat
that the$_{nom}$ astronaut the$_{acc}$ planet$_{acc}$ discovered has
b. dass [$_{vP}$ den Planeten$_2$ [$_{v'}$ der Astronaut$_1$ t$_2$ entdeckt]] hat
that the$_{acc}$ planet$_{acc}$ the$_{nom}$ astronaut discovered has

(3) a. čto [$_{vP}$ brigada$_1$ sostavljaet programmu$_2$]
that brigade$_{nom}$ sets up programme$_{acc}$
b. čto [$_{vP}$ programmu$_2$ [$_{v'}$ brigada$_1$ sostavljaet t$_2$]]
that programme$_{acc}$ brigade$_{nom}$ sets up

Both German and Russian have morphological Case, in the sense that the abstract Case of an NP can be morphologically marked on the noun and on a preceding determiner (or adjective) that agrees with it. The fact that scrambling to Specv is permitted is therefore compatible with (1-a) (as well as with (1-b) and (1-c)).[3]

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[2]A fourth possibility would be a bi-conditional: A language has free word order iff it has morphological Case. I will ignore this in what follows because everything that will be said against (1-a) automatically carries over to this option.

[3]Unlike German, colloquial Russian also permits scrambling to an outer specifier of CP, as in (i-ab), and long-distance scrambling into a Specv position of a matrix clause, as in (i-c) (see Zemskaja (1973) and Yadroff (1991)).

(i) a. Jy byl [$_{CP}$ novuju školu$_2$ [$_{C'}$ gde strojat t$_2$]]
I was new school where they build
b. Ty znaeš′ [$_{CP}$ Petr Ivanyč$_1$ [$_{C'}$ čto t$_1$ uže priexal]] ?
you know Petr Ivanych that already came

The non-existence of scrambling in English is shown by (4-bcd) vs. (4-a). In accordance with (1-a) (as well as with (1-b), (1-c)), English does not exhibit morphological Case.[4]

(4) a. that John$_1$ [$_{vP}$ t$_1$ gave Mary$_2$ a book$_3$]
b. *that John$_1$ [$_{vP}$ Mary$_2$ [$_{v'}$ t$_1$ gave t$_2$ a book$_3$]]
c. *that John$_1$ [$_{vP}$ a book$_3$ [$_{v'}$ t$_1$ gave Mary$_2$ t$_3$]]
d. *that John$_1$ [$_{vP}$ t$_1$ gave a book$_3$ Mary$_2$ t$_3$]

On the basis of these assumptions, let me now turn to the issue of scrambling in optimality-theoretic syntax.

2. Scrambling in Optimality-Theoretic Syntax

2.1. Premisses

It has often been observed that scrambling in languages like German and Russian has information-structural effects (concerning notions like focus, topic, definiteness, etc.). These effects can be viewed as resulting from linearization constraints that refer to these information-structural notions, usually in interaction with other, purely grammar-internal, constraints that determine the base order of arguments.[5] It turns out that nearly all of the existing approaches to scrambling (or, more generally, free word order) that have been developed in optimality-theoretic syntax crucially rely on linearization constraints of this type; see Choi (1996; 1999), Büring (1997; 2001), Legendre (1998), Müller (1999), Heck (2000), Costa (2001), Gouskova (2001), and, for an overview, Müller (2000, ch. 6). In all these approaches, whether or not scrambling applies (i.e., free word order is possible) depends on the relative ranking of constraints that favour rigid (or base) order on the one hand (e.g., the constraint STAY (*t) from Grimshaw (1997) and Legendre, Smolensky, & Wilson (1998)), and linearization (or alignment) constraints that favour displacement on the other.[6]

A common property of all these approaches is that the availability of scrambling in a

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c. čto ty$_1$ menja$_2$ vižu [$_{CP}$ čto t$_1$ ljubiš′ t$_2$]
that you$_{nom}$ me$_{acc}$ I see that love

These constructions may have important consequences for the theory of movement (in particular in view of the fact that *wh*-movement appears to be much more restricted in Russian, thereby creating a picture that is diametrically opposed to what we see in German; see Müller (1995)). Nevertheless, I will abstract away from scrambling to CP and to the matrix vP in what follows, and leave open the question of whether scrambling in examples like those in (i) is a movement operation of the same type as the relatively local "standard" scrambling operations that I am interested in here.

[4]Personal pronouns like *she* vs. *her* are an exception that I consider synchronically irrelevant.

[5]See, e.g., Lenerz (1977), Hoberg (1981; 1997), Uszkoreit (1984), Reis (1986), Jacobs (1988), and Primus (1994) on German; and Krylova & Chavronina (1976), King (1995), and Junghanns & Zybatow (1997) on Russian.

[6]The approach developed in Heck & Müller (2000) is an exception. Here, scrambling is triggered either by a constraint that requires certain formal features to be checked by movement, or, exceptionally, by other structural, non-linearization-based constraints that require certain (parasitic) traces to be bound, certain pronouns to have a c-commanding antecedent, etc.

given language is exhaustively determined by the relative ranking of these kinds of constraints; as it stands, there is no room for correlating scrambling (free word order) with morphological Case (or any other morphological property of a language). This is in line with a general assumption in optimality-theoretic syntax: Cross-linguistic variation results from a re-ranking of syntactic constraints; ideally, this should be all that has to be said. Accordingly, the optimality-theoretic approach to the Pro-drop parameter developed in Grimshaw & Samek-Lodovici (1998) dispenses with the traditional idea that Pro-drop is related to rich agreement morphology on V; and the optimality-theoretic approach to the V-to-I movement parameter in Vikner (2001a) does not predict a correlation with rich verbal morphology, as it is often assumed. Thus, the fact that the existing optimality-theoretic approaches to scrambling do not envisage a correlation with morphological Case fits into this general picture.

To illustrate what has just been said, I will now sketch a (simplified) optimality-theoretic approach to scrambling in German that is based on work by Choi (1996; 1999) and Büring (1997; 2001). These two approaches (or, to be more precise, these two kinds of approaches – both Choi and Büring have significantly revised their earlier analyses in the published versions) are similar in some respects, and different in others. Consequently, the amalgamation that I will present will probably do neither approach justice; however, it may serve to illustrate the general point about scrambling and morphological Case.

2.2. Scrambling in German: Büring/Choi-Type Approaches

Let us assume that (5) is the base order of NP arguments in German.[7]

(5) *Base order in German*:
[$_{\text{vP}}$ NP$_{nom}$ [$_{\text{VP}}$ NP$_{dat}$ NP$_{acc}$ V] v]

Scrambling, i.e., movement of an NP to an outer specifier of v, invariably incurs a violation of STAY; see (6):

(6) STAY:
Movement is not allowed.

Consequently, scrambling must be triggered by constraints that outrank STAY. Among these we can take to be the linearization constraints in (7).

(7) a. TOPIC:
[+topic] precedes [–topic].
b. AGENT(IVITY):
[+agent] precedes [–agent].

[7]This assumption is by no means uncontroversial. Müller & Sternefeld (1994) and Müller (1999) argue that NP$_{acc} \succ$ NP$_{dat}$ is the base order; Haider (2000) argues that the base order of argument NPs is variable in that it depends on the type of V that is involved; and Heck (2000) argues that the base order of argument NPs is even more variable in the sense that factors like animacy play a crucial role (on which see also Fanselow (1995), Vogel & Steinbach (1998), and Müller (1999)). Still, for present purposes, (5) may suffice; alternative assumptions about base order in German would not affect the main line of argumentation below.

c. DEF(INITENESS):
[+def] precedes [–def].
d. FOC(US):
[–focus] precedes [+focus].

Here and henceforth, I will assume that the constraints in (7) are active only within vP. There are various ways to ensure this. One option would be to explicitly restrict the constraints to the vP domain; e.g., TOPIC could be reformulated as: "Within vP, [+topic] precedes [–topic]." Another option would be to assume that the constraints in (7) hold in all syntactic domains, but that there are higher-ranked constraints against (movement to) outer specifiers of TP, CP, etc.; at least in languages like German. I will leave this issue open.

As an illustration of how scrambling can be effected under these assumptions, consider instances of topic-driven scrambling in German and Russian, as in (8-ab).

(8) a. dass [$_{vP}$ den Planeten$_2$ [$_{v'}$ der Astronaut$_1$ t$_2$ entdeckt]] hat
that the$_{acc}$ planet$_{acc}$ the$_{nom}$ astronaut discovered has
b. čto [$_{vP}$ rasskazov$_2$ [$_{v'}$ ja$_1$ pročital [mnogo t$_2$]]]
that stories$_{gen}$ I read many

Assuming that the object is topic-marked and the subject is not, the ranking TOPIC $\gg$ AGENT, STAY predicts that the object moves across the subject to satisfy TOPIC, in violation of the lower-ranked constraints AGENT (which favours a subject-first order with verbs like *discover* and *read*) and STAY (which favours objects in situ).[8] The competition is shown in tableau T_1. O_2 is the optimal output that involves scrambling to vP.[9]

T_1: Topic-driven scrambling in front of the subject

Input: NP$_{nom,-top}$, NP$_{acc,+top}$	TOPIC	AGENT	DEF	FOC | STAY
O$_1$: [$_{vP}$ NP$_{nom,-top}$ NP$_{acc,+top}$ ...]	*!			|
☞O$_2$: [$_{vP}$ NP$_{acc,+top}$ NP$_{nom,-top}$ t$_{acc}$ ...]		*		| *

Other things being equal, if the object is not topic-marked in the input, the optimal candidate has the object remaining in situ. In this case, O_2's violations of AGENT and STAY are fatal, and O_1 is correctly predicted to be optimal; see tableau T_2.

Similarly, cases of focus-driven scrambling can be derived, the main difference being that here, it is a negatively specified item that scrambles: Focus-driven scrambling involves

[8] Also see Gouskova (2001) for an optimality-theoretic approach to topic-driven scrambling (and focus-driven scrambling; see below) in Russian that proceeds along these lines. Gouskova also investigates the apparent capability of Russian scrambling to escape from what is otherwise known as a barrier, as in (8-b), and suggests treating the prohibition against crossing a barrier in the course of movement as a violable constraint. These issues are orthogonal to my present concerns, though.

[9] Throughout this paper, I confine myself to competitions involving vP since this is the part of a sentence that is important for (the core cases of) scrambling. Additional structure on top of vP (viz., TP, CP, one or more matrix clause(s)) may be assumed to be present but irrelevant; alternatively, under a local optimization approach as in Heck & Müller (2000), Fanselow & Ćavar (2001), such structure may in fact still be absent at the stage of the derivation where vP optimization takes place.

T_2: Blocked scrambling in front of the subject

Input: $NP_{nom,-top}$, $NP_{acc,-top}$	TOPIC	AGENT	DEF	FOC | STAY
☞O_1: [$_{vP}$ $NP_{nom,-top}$ $NP_{acc,-top}$ ...]				|
O_2: [$_{vP}$ $NP_{acc,-top}$ $NP_{nom,-top}$ t_{acc} ...]		*!		| *

movement of non-focus-marked material so as to let a focus-marked item end up in a right-peripheral position. Some well-known sentences from German that illustrate the effect are given in (9) (see Lenerz (1977); focus is indicated by small capitals). Note in particular that scrambling of the direct object across the indirect object in (9-b) can be considered focus-driven in this sense; (9-a) shows that such scrambling does not appear to be obligatory in German; and (9-cd) show that scrambling of the focussed NP itself leads to deviance.

(9) a. dass der Fritz der MARIA$_1$ das Buch$_2$ gegeben hat
that the$_{nom}$ Fritz the$_{dat}$ Maria the$_{acc}$ book given has
b. dass der Fritz das Buch$_2$ der MARIA$_1$ t_2 gegeben hat
that the$_{nom}$ Fritz the$_{acc}$ book the$_{dat}$ Maria given has
c. dass der Fritz der Maria$_1$ das BUCH$_2$ gegeben hat
that the$_{nom}$ Fritz the$_{dat}$ Maria the$_{acc}$ book given has
d.?*dass der Fritz das BUCH$_2$ der Maria$_1$ t_2 gegeben hat
that the$_{nom}$ Fritz the$_{acc}$ book the$_{dat}$ Maria given has

The examples in (9) can be taken to indicate that the constraints FOCUS and STAY are tied, i.e., equally ranked.[10] If so, optionality can be derived for (9-ab). This is shown in tableau T_3.

T_3: Focus-driven optional scrambling in front of the indirect object

Input: $NP_{nom,-foc}$, $NP_{dat,+foc}$, $NP_{acc,-foc}$	TOPIC	AGENT	DEF	FOC | STAY
☞O_1: [$_{vP}$ $NP_{nom,-foc}$ $NP_{dat,+foc}$ $NP_{acc,-foc}$ ...]				* |
☞O_2: [$_{vP}$ $NP_{nom,-foc}$ $NP_{acc,-foc}$ $NP_{dat,+foc}$ t_{acc} ...]				| *

In contrast, the competition underlying (9-cd) is given in tableau T_4. Here, scrambling of the direct object in O_2 violates both FOCUS and STAY, either violation of which would suffice to render O_2 suboptimal. Hence, O_1 without scrambling is the sole optimal candidate.

T_4: Blocked scrambling in front of the indirect object

Input: $NP_{nom,-foc}$, $NP_{dat,-foc}$, $NP_{acc,+foc}$	TOPIC	AGENT	DEF	FOC | STAY
☞O_1: [$_{vP}$ $NP_{nom,-foc}$ $NP_{dat,-foc}$ $NP_{acc,+foc}$ ...]				|
O_2: [$_{vP}$ $NP_{nom,-foc}$ $NP_{acc,+foc}$ $NP_{dat,-foc}$ t_{acc} ...]				*(!) | *(!)

[10]There are various different concepts of constraint ties in the literature. For present purposes, we can assume a global notion according to which a constraint tie is an abbreviation for the simultaneous presence of two (or more) constraint rankings in a language. A candidate is grammatical if it is optimal under at least one ranking that results from a resolution of the tie.

Focus-driven scrambling in Russian can be exemplified by data such as (10-ab) (see Krylova & Chavronina (1976) and King (1995), among others).[11]

(10) a. Etu knigu_2 PUŠKIN_1 napisal t_2
this$_{acc}$ book$_{acc}$ Pushkin$_{nom}$ wrote
b. [$_{\text{VP}_3}$ Čitaet knigu] [$_{\text{vP}}$ OTEC t_3]
reads book father

These examples may suffice to illustrate optimality-theoretic approaches to scrambling of the Büring/Choi type. A general property of this kind of analysis is that ideally (i.e., except for the effects of ties), every well-formed output with variable word order in a scrambling language is the sole optimal realization of a given input specification. Needless to say, the preceding discussion has left out many aspects of the Büring/Choi approach to scrambling; and arguably, this approach may eventually prove to be somewhat too strict and suffer from the problem of undergeneration (e.g., whereas sentences like (9-d) do seem to be highly marked, it is not clear that they should be considered as fully ungrammatical), which may necessitate additional assumptions.[12] But that aside, I contend that the approach just sketched is both linguistically plausible and representative in its essentials of optimality-theoretic approaches to scrambling.

Still, it is evident that there is no room in this analysis for the idea that scrambling is possible only if rich Case morphology is present in a language, i.e., that hypothesis (1-a) is correct. Under the present view, scrambling and Case morphology are independent properties of a language; scrambling does not rely on morphology, but on rankings like TOPIC $\gg$ STAY or FOCUS $\gg$ STAY (in one resolution of the tie). In line with this, the only reason why English does not have scrambling is that STAY is ranked higher than constraints like TOPIC and FOCUS that may force movement to an outer specifier of vP.[13] What can be done in view of this situation?

2.3. Integrating Morphological Case – Two Failed Attempts

Suppose first that we were to adopt a meta-constraint on ranking, as in (11).

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[11](10-a) presupposes that FOCUS can outrank AGENT in Russian. (10-b) looks like a case of VP scrambling. VP scrambling also seems to be involved in some cases of long-distance scrambling in Russian; see the references in footnote 3. This difference between German and Russian will not be addressed in the present paper.

[12]See, e.g., the proposal in Müller (1999), which can be viewed as a slightly more elaborate (and complicated) version of the Büring/Choi approach.

[13]Depending on whether or not all vP linearization constraints must be grouped together or can freely be distributed over rankings, this approach may open up the possibility that some language has scrambling to satisfy some vP linearization constraints (e.g., TOPIC, under a ranking TOPIC $\gg$ STAY), and has no scrambling in violation of others (e.g., FOCUS, under a simultaneous ranking STAY $\gg$ FOCUS). I assume that a language has scrambling if it has at least one kind of linearization-driven movement to an outer specifier of vP, in violation of STAY.

(11) *Meta-constraint on ranking*:
vP-linearization constraints can outrank STAY in language L only if L has morphological Case.

This would impose a fixed ranking among certain constraints in languages that do not have morphological Case and thereby correctly predict that, e.g., English cannot have scrambling. However, it is clear that a meta-constraint like (11) is ad hoc; it is basically a statement of the problem, not its solution.

Suppose next that the vP-linearization constraints in (7) are reformulated in such a way that they trigger scrambling only if an NP bears morphological Case. This can be done as in (12).

(12) a. TOPIC′:
A [+topic] NP with morphological Case precedes [–topic] material.
b. AGENT(IVITY)′:
A [+agent] NP with morphological Case precedes [–agent] material.
c. DEF(INITENESS)′:
A [+def] NP with morphological Case precedes [–def] material.
d. FOC(US)′:
A [–focus] NP with morphological Case precedes [+focus] material.

This, too, would imply that scrambling can only occur in languages with morpholocial Case: In languages without morphological Case, constraints like TOPIC′ simply do not require NP displacement within vP, and any such displacement will therefore fatally violate STAY. However, such a move is also conceptually unattractive for at least two reasons. First, the revised vP linearization constraints are not as simple and general anymore as they arguably should be in an optimality-theoretic approach (see Grimshaw (1999)). Second, the difference between scrambling languages with morphological Case and non-scrambling languages without morphological Case is not due to constraint ranking anymore: A ranking like TOPIC′, ... ≫ STAY will trigger scrambling in the former, but not in the latter. Thus, the scrambling languages German and Russian on the one hand, and the non-scrambling language English on the other, could have the same ranking of STAY and vP linearization constraints. (However, a ranking STAY ≫ TOPIC′, ... would block scrambling even in languages with rich Case morphology.) Essentially, then, important aspects of cross-linguistic variation with respect to scrambling would be handled in a non-optimality-theoretic way, even though the general approach remains optimality-theoretic.[14]

[14]Note incidentally that the step taken in (12) closely resembles the revised approach to the V-to-I movement parameter in Vikner (2001b). Recall that Vikner (2001a) develops an analysis that does not envisage a relation between V-to-I movement and rich morphology. In Vikner (2001b), this view is abandoned, and replaced by an analysis in which the constraint that forces V-to-I movement applies only if inflectional morphology is sufficiently rich in a given language. Hence, nothing forces V-to-I movement in languages with poor inflectional morphology on verbs, and therefore, such movement is blocked here. On the other hand, V-to-I movement may be blocked despite rich inflectional morphology under a certain ranking of constraints. This parallels the approach to scrambling just sketched in the main text.

In addition to these conceptual considerations, there are severe empirical problems with the view that scrambling depends on the presence of morphological Case: It turns out that scrambling is in fact possible in the absence of morphological Case. This will be shown on the basis of two phenomena: First, scrambling of items without morphological Case in languages that have morphological Case; and second, scrambling in languages that have no morphological Case to begin with. Let me begin with the former issue.

Note that whereas morphological Case is often marked on NPs in scrambling languages like German and Russian, not all NPs do in fact exhibit morphological Case. For instance, German proper names typically do not bear any Case morphology whatsoever; still, they can undergo scrambling, as shown in (13-a).[15] Similarly, the reflexive pronoun *sich* not only lacks morphological Case; arguably, it may even lack abstract Case in certain constructions.[16] However, it can undergo scrambling; see (13-b). Finally, the R-pronoun *da* ('there') can be scrambled out of a PP; see (13-c). Whereas the categorial status of R-pronouns (as NPs, PPs, or perhaps underspecified [–V]Ps) is not unanimously agreed on, it is clear that R-pronouns do not bear morphological Case.

(13) a. dass Martin$_1$ keiner t_1 gesehen hat
that Martin no-one$_{nom}$ seen has
b. dass sich$_1$ diese Leute t_1 nicht leiden können
that REFL these people not stand can
c. dass da$_1$ der Fritz [$_{NP}$ ein Buch t_1 über] gelesen hat
that there the Fritz a book about read has

Likewise, Russian has more than 350 nouns that cannot bear Case morphology, e.g., *kofe* 'coffee', *pal′to* 'coat', *interv′ju* 'interview' (see Isačenko (1975)); however, NPs that contain

[15]Two remarks. First, proper names in German do bear overt genitive Case morphology. Genitive Case is extremely marginal in the verbal domain, though. Second, proper names are optionally preceded by a definite article in German (as in *den Martin* 'the Martin'), in which case they also have morphological Case. See section 2.5.4 below.

[16]See Müller & Sternefeld (1994). The basic observation is that German reflexive (and reciprocal) pronouns are immune to Case absorption in the passive; see (i-a) vs. (i-b).

(i) a. dass sich hier nicht gewaschen wird
that REFL here not washed is
b. *dass den Martin hier nicht gewaschen wird
that the$_{acc}$ Martin here not washed is

The wellformedness of (i-a) implies that *sich* can remain without (abstract and morphological) Case in German, whereas other NPs must at least bear abstract Case. Of course, this does not mean that *sich* never bears abstract Case. In constructions involving Case agreement like (ii), e.g., it seems clear that *sich* must bear an abstract accusative Case because this is the only source that the NP *den größten Helden* can derive its accusative Case from.

(ii) dass er sich als den größten Helden sieht
that he$_{nom}$ REFL as the$_{acc}$ biggest$_{acc}$ hero$_{acc}$ views

only these nouns can scramble.[17]

In addition to NPs without morphological Case, other categories that cannot bear Case for principled reasons (e.g., PPs and CPs) can also undergo scrambling in German; see (14-ab).

(14) a. dass [$_{PP_1}$ darüber] der Fritz [$_{NP}$ ein Buch t_1] gelesen hat
that there about the Fritz a book read has
b. dass [$_{CP_1}$ das Buch zu lesen] keiner t_1 versucht hat
that the book to read no-one tried has

The same goes for Russian, which also permits VP scrambling (see (10-b) and the examples in Müller & Sternefeld (1993)). Again, these facts are entirely unexpected if scrambling of some item α depends on the presence of morphological Case on α. (And, of course, PPs and CPs cannot be scrambled in non-scrambling languages like English.)

Finally, consider the situation in Bulgarian. Bulgarian has a Case system that closely resembles that of English in that morphological Case does not generally exist anymore: Subjects and direct objects cannot be distinguished morphologically; and indirect objects and objects that would be expected to bear abstract genitive Case are preceded by a preposition *na* (corresponding to English 'to' and 'of', respectively). However, Bulgarian has scrambling of the German/Russian type, with roughly the same information-structural effects.[18] Scrambling in Bulgarian is shown in (15).[19]

(15) a. Ivan$_1$ otvori vratata$_2$
Ivan opened door the
b. Ivan$_1$ vratata$_2$ otvori t_2
Ivan door the opened

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[17]In both German and Russian, scrambling of an NP without morphological Case across another NP without morphological Case may induce a decrease in acceptability, especially if ambiguity may arise and contextual information is insufficient. However, unlike Lee (1999) and Vogel (2001b) (both based on an insight that goes back to Roman Jakobson), I do not take this to be grammatically significant; rather, I would like to contend that parsing difficulties are involved in these cases.

[18]See Molxova (1970), Georgieva (1974), and Rudin (1985), among others.

[19]Note that Bulgarian has clitic pronoun doubling, and the pronouns do indeed bear morphological Case. At first sight one might think that Bulgarian is like German and Russian after all, in having NP scrambling only in the presence of morphological Case on the doubled pronouns. But closer inspection reveals that this cannot be the case: Pronoun doubling is optional throughout in Bulgarian (e.g., there are no doubled pronouns in (15)). Furthermore, it turns out that even pronoun doubling does not necessarily disambiguate a sentence (see Rudin (1985, 17)): (i-a) with a feminine object clitic has a (preferred) reading in which *Marija* is the subject, and another (possible, albeit slightly more marked) reading in which *Tanja* is the subject.

(i) a. Tanja ja vidja Marija
Tanja her saw Marija
b. Reading (i): Marija saw Tanja
c. Reading (ii): Tanja saw Marija

Thus, the existence of pronoun doubling in Bulgarian does not affect the claim that scrambling does not depend on morphological Case in this language.

c. Vratata$_2$ Ivan$_1$ otvori t_2
door the Ivan opened

To sum up: On the conceptual side, we have seen that the hypothesis that morphological Case is a prerequisite for scrambling (see (1-a)) is difficult to reconcile with optimality-theoretic approaches to scrambling in a straightforward way. On the empirical side, it has turned out that the assumption that morphological Case is a prerequisite for scrambling is falsified by evidence from German, Russian, and, especially, Bulgarian. That leaves hypotheses (1-c) and (1-b) as the only remaining options: Either scrambling and morphological Case are unrelated, or morphological Case is not a prerequisite for scrambling, but a reflex of scrambling. As noted above, it may eventually turn out that hypothesis (1-c) is the correct one.[20] Still, hypothesis (1-b) is arguably more interesting, and for that reason I would like to pursue it in what follows.

The first thing to note is that the more radical hypothesis (1-b) directly adheres to a bold assumption that has sometimes been made in optimality-theoretic syntax concerning the relation between syntax and morphology: In contrast to what is often assumed, morphological properties, on this view, do not determine parameter setting; rather, parameter setting (= constraint ranking) can determine morphological properties. This program is pursued, e.g., in Grimshaw's (1997) analysis of *do*-support, and in Legendre, Smolensky & Wilson's (1998) analysis of resumptive pronouns in Chinese. In this context, Legendre, Smolensky & Wilson introduce the slogan "The functional lexicon is slave to the syntax." If we view morphological Case as part of the functional lexicon, the hypothesis presently under investigation lends itself to exactly this interpretation. Thus, the proposal that I would like to advance is the following: The existence of Case morphology in a given language can ultimately be traced back to a constraint ranking that triggers scrambling.[21] I will first outline the approach, and then discuss various pieces of (apparent and real) counter-evidence.

3. The Proposal

3.1. Morphological Case as a Reflex of Scrambling

Throughout, I presuppose that there is a distinction between abstract Case and morphological Case. Abstract Case is a general property of NPs. The choice of the correct abstract Case for a given argument (lexical vs. structural, unmarked structural vs. marked structural) is argued to be determined by optimization procedures in much recent literature; see, e.g., Fanselow (1999), Kiparsky (1999), Stiebels (2000), Wunderlich (2000), Vogel (2001a),

[20] This would correspond to the view taken in Alexiadou & Fanselow (2001) with respect to the V-to-I movement parameter.

[21] Also see Samek-Lodovici (2001) on the syntactic determination of agreement in optimality theory, and Aissen (2000) on Case. Note that whereas I am concerned with word order as a possible trigger for morphological Case, Aissen identifies inherent properties of a given NP (e.g., its animacy status) as the trigger for morphological Case. The two approaches are not necessarily incompatible. Adopting them simultaneously would demand a weakening of (1-b), to the effect that a language has morphological Case only if either scrambling or one of the triggers envisaged by Aissen is present.

Woolford (2001), and Müller (2000, ch. 7) for an overview. Alternatively, the abstract Case of an NP may directly be determined by the GEN component of an optimality-theoretic grammar, without recourse to optimization. In what follows, I will have nothing new to say on this issue; I will simply assume that each NP bears abstract Case in the languages currently under consideration, and ignore the issue in what follows (accordingly, specifications like "nom" and "acc" on NPs will unambiguously signal the presence of morphological Case, never the presence of abstract Case).[22] However, morphological Case is not a general property of NPs. By hypothesis, it arises as a reflex of a certain constraint ranking, viz., one in which vP linearization constraints like TOPIC and FOCUS outrank STAY, and CASE outranks DEPFUNC. CASE can be defined as follows.

(16) CASE:
An NP at the edge of vP has morphological Case.

The notion of edge here is adapted from Chomsky (2000; 2001). Deviating slightly from Chomsky, I assume that a category is at the edge of an XP if it is in an outer specifier of XP.[23] CASE then implies that an NP that has undergone scrambling must be morphologically Case-marked. The radical assumption now is that morphological Case (in the vP domain) exists only because it is required by CASE. There is no morphological Case in the lexicon. Therefore, syntactic inputs (numerations) do not contain morphological Case markers either – morphological Case is not given; it arises as a result of optimization in syntactic derivations. As a result, the presence of morphological Case invariably incurs a violation of DEPFUNC, a dependency faithfulness constraint that prohibits the insertion of functional material in the output that is not present in the input.

(17) DEPFUNC:
Functional material of the output must be part of the input.

To see how morphological Case can arise as a reflex of scrambling, consider first cases of multiple scrambling of all NP arguments across an adverb in German. It is well known that adverbs of place and negation typically show up in a position close to the verb in German. I will take this to mean that these adverbs are base-generated in an outer specifier of vP, where they minimally c-command the base position of subject NPs (i.e., the inner specifier of vP). In the unmarked case, all NP arguments scramble in front of such an adverbial; see (18-ab).

[22]This leaves open many important questions concerning, e.g., the number and types of abstract Cases in languages without morphological Case like English and Bulgarian, and the question of how distinct abstract Cases can be identified in such languages in the first place; see Zifonun et al. (1997) on a proposal that relies on equivalence class formation.

[23]The main difference to Chomsky (2000; 2001) is that the inner specifier of an XP also counts as an edge position in his account. If XP adjuncts exist, they may also be at the edge of XP, but given that scrambling is movement to an outer specifier, not adjunction, this is irrelevant for what follows (and the differences between the two options are in any case fairly subtle). Note, however, that the notion of "edge" employed here is not to be confused with the notion of "edge" as it is widely used in optimality-theoretic phonology; on this, see Chomsky's notion of "phonological border."

(18) a. dass [$_{vP}$ der $Fritz_1$ [$_{v'}$ den $Karl_2$ [$_{v'}$ in der Kneipe [$_{v'}$ t_1 t_2 getroffen]]]] hat
that the$_{nom}$ Fritz the$_{acc}$ Karl in the pub met has

b. dass [$_{vP}$ der $Fritz_1$ [$_{v'}$ den $Karl_2$ [$_{v'}$ nicht [$_{v'}$ t_1 t_2 getroffen]]]] hat
that the$_{nom}$ Fritz the$_{acc}$ Karl not met has

Multiple NP scrambling of this type can be assumed to be triggered by a specific linearization constraint that forces NPs to show up in front of adverbials of this type (see Müller (1999) for a proposal, and for an account of the optionality involved). To simplify the discussion from now on, I will indicate the activity of a linearization constraint that triggers scrambling to an outer specifier of vP by a [scr] specification in the input; SCRCON stands for the ranked set of vP linearization constraints that trigger scrambling.[24] The competition underlying examples like those in (18) in scrambling languages like German and Russian is then shown in tableau T_5.[25]

T_5: Morphological Case because of scrambling (German, Russian)

Input: $NP_{1,[scr]}$ $NP_{2,[scr]}$, ...	SCR CON	STAY	CASE	DEP FUNC
O_1: [$_{vP}$ NP_1 v [$_{VP}$ V NP_2]]	*!*			
O_2: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V NP_2]]	*!*			*
O_3: [$_{vP}$ NP_1 v [$_{VP}$ V $NP_{2,acc}$]]	*!*			*
O_4: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V $NP_{2,acc}$]]	*!*			**
O_5: [$_{vP}$ NP_2 NP_1 v [$_{VP}$ V t_2]]	*!	*	*	
O_6: [$_{vP}$ NP_2 $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!	*	*	*
O_7: [$_{vP}$ $NP_{2,acc}$ NP_1 v [$_{VP}$ V t_2]]	*!	*		*
O_8: [$_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!	*		**
O_9: [$_{vP}$ NP_1 NP_2 t_1 v [$_{VP}$ V t_2]]		**	*!*	
O_{10}: [$_{vP}$ $NP_{1,nom}$ NP_2 t_1 v [$_{VP}$ V t_2]]		**	*!	*
O_{11}: [$_{vP}$ NP_1 $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		**	*!	*
☞O_{12}: [$_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		**		**

First, O_1–O_4 in T_5 are outputs in which scrambling does not apply even though there is, by assumption, an input specifiation on both NPs that forces them to scramble, given SCRCON. Hence, the two NPs in situ incur two SCRCON violations, the first of which is already fatal, independently of the question of whether they exhibit morphological Case or not. Next, O_5–O_8 involve scrambling of the object NP, but the subject NP stays in situ. Again, this incurs a fatal SCRCON violation, irrespective of the issue of morphological Case. Finally, O_9–O_{12} have scrambling of both NPs, which respects SCRCON and violates the lower-ranked STAY non-fatally. Here, the ranking of CASE and DEPFUNC becomes relevant. O_9 does not

[24]Note that [scr] does not necessarily stand for a specific feature like [±top] or [±foc] that triggers scrambling by constraints like TOPIC and FOCUS, and that may or may not be present on an NP in the input. In (18), it is simply the feature [+N] that forces scrambling accross adverbials.

[25]Here and in what follows, I focus on one ranking that produces the intended result. Often, other rankings would also be compatible with the empirical evidence (e.g., re-ranking STAY and CASE has no effect in T_5). Note also that the linear order of v, V and their complements given here is a simplification that may be correct for Russian, but not for German (see (5)).

have any morphological Case on the scrambled NPs, and O_{10} and O_{11} have morphological Case on only one of the two NPs in SpecvP. All three candidates therefore incur fatal violations of CASE. O_{12} has morphological Case on both NPs, violating DEPFUNC twice but respecting CASE. Therefore, this output is the sole optimal candidate.

If a language maintains the ranking SCRCON $\gg$ STAY but reverses the ranking of CASE and DEPFUNC, it will exhibit scrambling, but no morphological Case, as in Bulgarian. This is illustrated in tableau T_6.

T_6: Absence of morphological Case despite scrambling (Bulgarian)

Input: $NP_{1,[scr]}$ $NP_{2,[scr]}$, ...	SCR CON	STAY	DEP FUNC	CASE
O_1: [$_{vP}$ NP_1 v [$_{VP}$ V NP_2]]	*!*			
O_2: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V NP_2]]	*!*		*	
O_3: [$_{vP}$ NP_1 v [$_{VP}$ V $NP_{2,acc}$]]	*!*		*	
O_4: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V $NP_{2,acc}$]]	*!*		**	
O_5: [$_{vP}$ NP_2 NP_1 v [$_{VP}$ V t_2]]	*!	*		*
O_6: [$_{vP}$ NP_2 $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!	*	*	*
O_7: [$_{vP}$ $NP_{2,acc}$ NP_1 v [$_{VP}$ V t_2]]	*!	*	*	
O_8: [$_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!	*	**	
☞O_9: [$_{vP}$ NP_1 NP_2 t_1 v [$_{VP}$ V t_2]]		**		**
O_{10}: [$_{vP}$ $NP_{1,nom}$ NP_2 t_1 v [$_{VP}$ V t_2]]		**	*!	*
O_{11}: [$_{vP}$ NP_1 $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		**	*!	*
O_{12}: [$_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		**	*!*	

O_1–O_8 emerge as suboptimal in T_6 for the same reason that their counterparts in T_5 are excluded: They fatally violate SCRCON. However, given the ranking DEPFUNC $\gg$ CASE, O_9 is optimal in Bulgarian instead of O_{12}.

Finally, let us turn to languages like English that do not exhibit scrambling. These languages have a ranking STAY $\gg$ SCRCON (i.e., all vP linearization constraints are ranked below STAY). It follows from this ranking that candidates with morphological Case will invariably be suboptimal, independently of how CASE and DEPFUNC are ranked with respect to another; see tableau T_7.

O_5–O_{12} are suboptimal outputs in T_7 because of fatal STAY violations. Of the candidates that respect STAY by not applying scrambling (and that therefore violate SCRCON twice), none can violate CASE. This is so because no NP is in an outer specifier of vP in any of the candidates (the subject NP being in an inner specifier throughout); hence, CASE is vacuously fulfilled in all four outputs O_1–O_4. That being so, the decision falls to DEPFUNC, which picks out O_1 even if it is lowest-ranked. This way, it follows that morphological Case can only become optimal as a reflex of scrambling.

3.2. Problems

As mentioned above, the present approach raises a number of questions. I would like to address what I take to be the most conspicuous problems in this section.

T_7: Absence of morphological Case without scrambling (English)

Input: $NP_{1,[scr]}$ $NP_{2,[scr]}$, ...	STAY	SCR CON	CASE	DEP FUNC
☞O_1: [$_{vP}$ NP_1 v [$_{VP}$ V NP_2]]		**		
O_2: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V NP_2]]		**		*!
O_3: [$_{vP}$ NP_1 v [$_{VP}$ V $NP_{2,acc}$]]		**		*!
O_4: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V $NP_{2,acc}$]]		**		*!*
O_5: [$_{vP}$ NP_2 NP_1 v [$_{VP}$ V t_2]]	*!	*	*	
O_6: [$_{vP}$ NP_2 $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!	*	*	*
O_7: [$_{vP}$ $NP_{2,acc}$ NP_1 v [$_{VP}$ V t_2]]	*!	*		*
O_8: [$_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!	*		**
O_9: [$_{vP}$ NP_1 NP_2 t_1 v [$_{VP}$ V t_2]]	*!*		**	
O_{10}: [$_{vP}$ $NP_{1,nom}$ NP_2 t_1 v [$_{VP}$ V t_2]]	*!*		*	*
O_{11}: [$_{vP}$ NP_1 $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]	*!*		*	*
O_{12}: [$_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]	*!*			**

3.2.1. Case Paradigms

A first question concerns the nature of Case paradigms, more specifically, the role that morphology plays in the system just outlined. As it stands, it can be ensured that an NP must have some kind of morphological Case (under certain conditions; see below). However, the present approach, as such, does not yet say anything about the actual form of morphological Case on an NP. Even if we are prepared to assume (at least for the purposes of this discussion, and for the languages under consideration) that morphological Case marking is accomplished by specific suffixes, many questions arise: Why do Case markers look the way they do in a given language? How can the distribution of what (at least at first sight) looks like zero (phonetically empty) morphological Case markers be accounted for, and how can such zero Case markers in a language like German be systematically distinguished from the absence of morphological Case in a language like English? On which items of an NP does a language with morphological Case actually realize the Case marker?[26]

Questions like these belong to the realm of morphology, and the information needed here is usually assumed to be encoded in Case paradigms. These are often assumed to be part of the lexicon, or, at least, pre-syntactic, hence, already available in the syntactic input. However, under the present approach, paradigmatic information of this type cannot yet be available in the input: By assumption, morphological Case violates DEPFUNC exactly because it is *not* part of the input. This apparent dilemma would dissolve if we were to adopt a late insertion approach, at least for inflectional morphology.[27] An alternative solution would

[26]Thus, German typically expresses morphological Case on a determiner or adjective, much more than on the noun itself; see the next subsection. In contrast, Russian has morphological Case on both nouns and prenominal determiners and adjectives.

[27]This might be implemented in a version of distributed morphology (see Harley & Noyer (1999) for an overview). However, in standard distributed morphology, all lexical items are inserted after syntax has applied. Additional assumptions would then be necessary to ensure that there is a difference between (low-ranked) DEP violations incurred by the insertion of content words, and (higher-ranked) DEP violations incurred by the insertion of function words and inflectional morphology.

be to assume that morphological properties of Case paradigms can be derived in the syntax directly. Under this view, the rankings SCRCON ≫ STAY, CASE ≫ DEPFUNC require the presence of a Case marker, and the exact shape of this marker is determined by violable and ranked morpho-phonological constraints. The interaction of these constraints then predicts Case paradigms, which therefore emerge as mere epiphenomena. Such a view presupposes that Case paradigms are highly regular and can be determined in a systematic way. This, indeed, seems to be the case. Bierwisch (1967), Blevins (1995), Wunderlich (1997), and Wiese (1999) show that Case paradigms are largely predictable in German. Building on this research, I develop an optimality-theoretic approach to morphological Case in Müller (2001b), a paper that complements the present one. In this approach, the shape and the distribution of Case markers in German are both determined syntax-internally, without reference to either a non-syntactic (lexical or morphological) component or the notion of paradigm, by relying on the sonority hierarchy and a small set of higher-ranked feature co-occurrence restrictions that block the simultaneous presence of certain morpho-syntactic specifications and certain phonological features on determiners, nouns, and adjectives.[28] Given that such an approach can be viewed as empirically successful (in deriving all existing Case markers) and independently motivated (e.g., in contrast to what is the case in other approaches, all instances of syncretism can be shown to be non-accidental), and assuming that it can be generalized to other languages (like Russian), we can minimally conclude that the present analysis – according to which paradigmatic information about the shape of Case markers is not available pre-syntactically – is unproblematic in that respect.

3.2.2. Phonology and Diachrony: Old English and Middle English

According to the linguistic folklore, the primary reason for the loss of morphological Case is ultimately phonological in nature. Evidently, this view is incompatible with the present approach, which implies that morphological Case gets lost because vP linearization constraints are demoted below STAY. Let me illustrate the two approaches on the basis of a well-known phenomenon: the loss of morphological Case in the history of English.

Old English has both rich Case morphology and scrambling. Both properties are lost in the Middle English period (see van Kemenade (1987), and Roberts (1997), among others). The scenario standardly devised for this change looks as follows. First, the variable word stress of Indo-European becomes fixed as initial stress in Germanic. Second, as a consequence of this, phonological reduction affecting final syllables takes place between Old English and Early Middle English. Specifically, unstressed vowels are reduced to schwa, and final nasals are lost. Third, for reasons of paradigm uniformity, morphological levelling takes place. Fourth, as a result of phonological reduction and morphological levelling, morphological Case is lost in Middle English. Fifth and finally, under hypothesis (1-a) according to which morphological Case is a prerequisite for scrambling, it follows that scrambling is lost in Middle English.

In contrast, the present approach relies on hypothesis (1-b) and takes scrambling to be

[28]Note incidentally that the approach in Müller (2001b) abandons zero Case markers in favour of the assumption that CASE can selectively be violated to fufill higher-ranked constraints.

a prerequisite for morphological Case. Therefore, it suggests a different scenario: First, scrambling is lost in Middle English, due to a demotion of SCRCON below STAY. Second (and finally), as a consequence of the new ranking, morphological Case is lost. Of course, the question now is how the phonological (and morphological) diachronic evidence fits into this picture. Clearly, the new approach leads us to the assumption that phonological developments can in fact not be responsible for the loss of scrambling. As noted, this view is forced by the fact that Bulgarian still has ample scrambling despite a lack of morphological Case on anything but pronouns. (In contrast, Old Bulgarian has seven different morphological Cases.) Moreover, it is instructive to note that a phonological reduction of final syllables also took place in the history of German (between Old High German and Middle High German), without a simultaneous loss of scrambling or morphological Case. There is hardly any morphological Case marking on nouns anymore in Modern German (recall footnote 26): Feminine nouns have no morphological Case whatsoever in the singular; there is little more than a genitive *-(e)s* with masculine and neuter nouns of the most common ("strong") paradigm, and with proper names; and there is a dative *-n* for plural nouns (at least for those that do not already employ *-n* as a plural marker). All other Case suffixes show up in minor paradigms, most notably in the "weak" paradigm for masculine nouns. Thus, morphological Case in German is typically marked on determiners and prenominal adjectives. At least in the case of determiners, this is perfectly compatible with a monosyllabic word; see, e.g., *der Mann* ('the$_{nom}$ man'); *des Mann-(e)s* ('the$_{gen}$ man$_{gen}$'); *dem Mann* ('the$_{dat}$ man'); *den Mann* ('the$_{acc}$ man').

I would like to conclude from this that it is by no means a priori implausible to assume that there is no direct connection between phonological reduction of unstressed syllables and the presence of morphological Case (such that the former makes the latter impossible). Rather, it seems that if there is a syntactically determined need for morphological Case in a given language, the language will find a means to realize it in a way that is compatible with its phonological system. Phonological reduction of final syllables and loss of morphological Case happened to co-occur in the history of English at roughly the same time; but they did not co-occur in the history of German.

3.2.3. Morphological Case in Icelandic

Since the present approach views morphological Case in the verbal domain as a reflex of scrambling, the prediction is that morphological Case should not occur in a language that does not exhibit scrambling (unless, that is, another trigger can be found). At first sight, it looks as though this prediction is falsified by evidence from Icelandic. Icelandic has morphological Case on NPs but does not seem to permit scrambling because the clause-internal relative order of argument NPs is basically fixed.

However, whereas Icelandic does not exhibit scrambling of the German, Russian, and Bulgarian type, there is good reason to believe that it has scrambling nevertheless. The relevant phenomena are usually identified as instances of non-pronominal object shift, i.e., operations that move NPs across an adverbial. Thus, I would like to contend that non-pronominal object shift in Icelandic is to be viewed as a scrambling operation that moves an NP to an outer specifier of vP, just like scrambling in German, Russian, and Bulgarian does (thereby, adverbials in vP specifiers are crossed). Under this assumption, a fundamental

difference between Icelandic and the other scrambling languages considered thus far must be accounted for: Scrambling strictly preserves the pre-movement order in Icelandic, and freely changes the pre-movement order in, e.g., German. Strict order preservation with scrambling in Icelandic is shown by the following data; see Collins & Thráinsson (1996).[29]

(19) a. Ég lána [$_{vP}$ ekki [$_{v'}$ Maríu$_1$ [$_{v'}$ bækurnar$_2$]]]
I lend not Maria$_{dat}$ the books$_{acc}$

b. Ég lána [$_{vP}$ Maríu$_1$ [$_{v'}$ ekki [$_{v'}$ t$_1$ [$_{v'}$ bækurnar$_2$]]]]
I lend Maria$_{dat}$ not the books$_{acc}$

c. Ég lána [$_{vP}$ Maríu$_1$ [$_{v'}$ bækurnar$_2$ [$_{v'}$ ekki [$_{v'}$ t$_1$ [$_{v'}$ t$_2$]]]]]
I lend Maria$_{dat}$ the books$_{acc}$ not

d. *Ég lána [$_{vP}$ bækurnar$_2$ [$_{v'}$ ekki [$_{v'}$ Maríu$_1$ [$_{v'}$ t$_2$]]]]
I lend the books$_{acc}$ not Maria$_{dat}$

e. *Ég lána [$_{vP}$ bækurnar$_2$ [$_{v'}$ Maríu$_1$ [$_{v'}$ ekki [$_{v'}$ t$_1$ [$_{v'}$ t$_2$]]]]]
I lend the books$_{acc}$ Maria$_{dat}$ not

(19-abc) preserve order (by moving either no object at all, only the higher one, or both objects in their pre-movement order), which (19-de) do not (only the lower object moves in (19-d), and the two moved objects reverse their pre-movement order in (19-e)). In Müller (2001a), I propose to account for the data in (19) by invoking a general constraint that requires order preservation (and that is independently motivated on the basis of displacement operations like *wh*-movement, pronoun fronting, and quantifier raising in many languages):

(20) PARMOVE (Parallel Movement):
If α c-commands β at level L$_n$, then α c-commands β at level L$_{n+1}$
(where α, β are argument NPs).

PARMOVE must be ranked below SCRCON in German and Russian, but above SCRCON in Icelandic. Hence, it is predicted that scrambling that is demanded by SCRCON in Icelandic can take place only if the resulting NP order does not violate the higher-ranked PARMOVE; this is exactly what the data in (19) suggest. This way, the main difference between scrambling in German and Russian, and non-pronominal object shift in Icelandic is accounted for, and we can maintain the generalization that morphological Case arises as a reflex of scrambling throughout.[30]

The analysis just given for Icelandic can possibly be extended to Dutch. Except for a construction that looks like (a certain type of) topic-driven scrambling (but that is called "focus-scrambling" in Neeleman (1994)), scrambling in Dutch normally does not change the pre-movement order of NPs. Arguably, Dutch is like Icelandic in this respect. However,

[29]Like scrambling in German, non-pronominal object shift in Icelandic superficially gives the impression of being optional.

[30]There are other differences between scrambling in German and Russian on the one hand, and non-pronominal object shift in Icelandic on the other. One is that scrambling seems to depend on raising of the main verb in the latter, but not in the former languages; another one might pertain to the A- vs. A-bar status of the operation. I assume that these differences, to the extent that they can be proved real, can be traced back to independently established properties of the languages involved.

Dutch is like English or Bulgarian in that it has lost morphological Case. This may well follow from a ranking in which SCRCON dominates STAY, as in all scrambling languages, DEPFUNC dominates CASE, as in Bulgarian, and PARMOVE dominates SCRCON, as in Icelandic (with the possible qualification that TOPIC is the sole vP linearization constraint that dominates PARMOVE). To sum up, rankings like those in (21) may account for the variation observed among the languages that have been discussed so far. (These rankings are not necessarily the only ones that are possible.)

(21) a. PARMOVE ≫ SCRCON ≫ STAY ≫ CASE ≫ DEPFUNC — Icelandic
b. PARMOVE ≫ SCRCON ≫ STAY ≫ DEPFUNC ≫ CASE — Dutch
c. SCRCON ≫ STAY ≫ PARMOVE ≫ CASE ≫ DEPFUNC — German, Russian
d. SCRCON ≫ STAY ≫ PARMOVE ≫ DEPFUNC ≫ CASE — Bulgarian
e. STAY ≫ SCRCON ≫ PARMOVE ≫ CASE ≫ DEPFUNC — English

3.2.4. Proper Names in German

Recall that items can be scrambled in German that do not bear morphological Case. As far as scrambled PPs and CPs are concerned, this is unproblematic: No constraint demands morphological Case here; hence, it is correctly predicted that these items can scramble without receiving morphological Case (presence of morphological Case involves an unmotivated, therefore fatal violation of DEPFUNC). However, as noted above, proper names can also be scrambled even though they typically do not seem to be morphologically Case-marked. In (22-ab), a proper name object without morphological Case is scrambled – in (22-a), in front of a subject NP with morphological Case, and in (22-b), in front of a subject NP that is also a proper name without morphological Case.

(22) a. dass [$_{vP}$ Martin$_1$ keiner$_2$ t$_1$ gesehen] hat
that Martin no-one$_{nom}$ seen has
b. dass [$_{vP}$ Martin$_1$ Peter$_2$ t$_1$ gesehen] hat
that Martin Peter seen has

There is one instance where German proper names do bear morphological Case: The genitive singular form of, e.g., *Martin* is *Martin-s*. The question is whether we can plausibly assume that this implies that proper names can bear morphological Case in the vP domain in German. There is reason to doubt this. Abstract genitive Case is fairly marginal in the vP domain in modern German. An older structural genitive of negation has disappeared completely; a lexical genitive is selected only by very few verbs (like *gedenken* ('rembember')), and will probably also vanish in the not too distant future. Interestingly, it turns out that bare proper names are extremely marginal as objects of verbs that require abstract genitive Case; see (23-ab).

(23) a. dass wir dies-es Mann-es gedachten
that we this$_{gen}$ man$_{gen}$ remembered
b.?*dass wir Martin-s gedachten
that we Martin$_{gen}$ remembered

Whatever the reason for the marginality of (23-b), it seems plausible to conclude that the proper names in (22) do in fact not bear morphological Case anymore. This would seem to imply that morphological genitive of proper names in German is confined to non-vP domains. The logic of the approach developed here leads us to conclude that there is a high-ranked constraint (one that outranks CASE) that prohibits morphological Case on proper names in the vP domain in German.[31] Such an approach may eventually shed new light on the emergence and increasing use of semantically empty definite determiners with proper names in German, as in (24) (compare (22-b)).

(24) dass [$_{vP}$ den Martin$_1$ der Peter$_2$ t$_1$ gesehen] hat
that the$_{acc}$ Martin the$_{nom}$ Peter seen has

Here, the determiner can reasonably be assumed not to be part of the input; hence, its insertion violates a DEPD constraint while at the same time satisfying CASE (and the above-mentioned constraint against morphological Case on the proper names themselves). At present, there is some (speaker-dependent and context-dependent) variability as to whether (22-b) or (24) is preferred. For the time being, we may assume DEPD and CASE to be tied (with strict resolutions of the tie into only one of the two rankings taking place in several varieties), and move on to the next problem – the problem that I take to be the most severe one.

3.2.5. Morphological Case In Situ

Thus far, it follows that under a ranking CASE $\gg$ DEPFUNC in a given language, an NP has morphological Case if it scrambles. However, it does not yet follow that an NP also has morphological Case in this language even if it does not scramble, but stays in situ. The problem is that scrambling is optional in the sense that there may or may not be an input specification for which a SCRCON constraint that outranks STAY then obligatorily induces scrambling. If an NP can fulfill all SCRCON constraints in situ, scrambling is blocked by STAY. CASE is then vacuously satisfied, and the presence of morphological Case is wrongly predicted to fatally violate the lowest DEPFUNC constraint. This disastrous consequence is shown in tableau T$_8$: Output O$_1$, which does not have any morphological Case, should block output O$_4$, which has morphological Case on all NPs in situ.

A simple way of reconciling the analysis with the existence of morphological Case in situ would be to assume that scrambling is in fact an obligatory operation, such that *all* NPs must show up in an outer specifier of vP in free word order languages. This kind of approach

[31] In fact, the prohibition might be more general. In contrast to other NPs, proper names cannot bear morphological genitive Case that is governed by P; compare *?*wegen Martin-s* ('because-of Martin$_{gen}$') with *wegen dies-es Mann-es* ('because-of this$_{gen}$ man$_{gen}$'). Furthermore, it turns out that proper names, unlike other NPs, can hardly show up in a postnominal position either (see Demske (2001)): *?*das Buch Martin-s* ('the book Martin$_{gen}$') contrasts with *das Buch dies-es Mann-es* ('the book this$_{gen}$ man$_{gen}$'). Thus, the only remaining option for a proper name bearing morphological genitive that is uncontroversial appears to be the prenominal position, as in *Martin-s Buch* ('Martin$_{gen}$ book'). If this proves tenable, we might in fact conclude that morphological Case is always suppressed with proper names in German, and that the prenominal *-s* of proper names is actually a different phenomenon with a different source, on a par with the similar construction in English.

T_8: Morphological Case without scrambling (German, Russian): a wrong prediction

Input: $NP_{1,[-]}$ $NP_{2,[-]}$, ...	SCR CON	STAY	CASE	DEP FUNC
☞O_1: [$_{vP}$ NP_1 v [$_{VP}$ V NP_2]]				
O_2: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V NP_2]]				*
O_3: [$_{vP}$ NP_1 v [$_{VP}$ V $NP_{2,acc}$]]				*
O_4: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V $NP_{2,acc}$]]				**
O_5: [$_{vP}$ NP_2 NP_1 v [$_{VP}$ V t_2]]		*!	*	
O_6: [$_{vP}$ NP_2 $NP_{1,nom}$ v [$_{VP}$ V t_2]]		*!	*	*
O_7: [$_{vP}$ $NP_{2,acc}$ NP_1 v [$_{VP}$ V t_2]]		*!		*
O_8: [$_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v [$_{VP}$ V t_2]]		*!		**
O_9: [$_{vP}$ NP_1 NP_2 t_1 v [$_{VP}$ V t_2]]		*!*	**	
O_{10}: [$_{vP}$ $NP_{1,nom}$ NP_2 t_1 v [$_{VP}$ V t_2]]		*!*	*	*
O_{11}: [$_{vP}$ NP_1 $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		*!*	*	*
O_{12}: [$_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		*!*		**

would be similar to what has been suggested by Frey & Tappe (1991) for German (where all NP arguments are base-generated in VP-adjoined positions). However, there is ample evidence from extraction, binding, and many other phenomena that NPs can show up in situ in scrambling languages (see Müller (1995)). Hence, this solution does not appear to be tenable.

In view of T_8, I would like to suggest that what is needed is a way to impose morphological Case on candidates where the context that forces its presence does not exist, on the basis of the fact that there are minimally different contexts where morphological Case is required. In other words: What is needed is a means to integrate a concept of analogy into optimality-theoretic syntax. As it turns out, optimality theory envisages such a concept in the guise of output/output faithfulness. A particularly restrictive version of output/output faithfulness is sympathy theory, and it is this approach that I want to turn to next.

4. Sympathy Theory

4.1. Sympathy and Phonological Opacity

Sympathy theory is developed in McCarthy (1999) for problems posed by instances of phonological opacity for standard versions of optimality theory that are inherently non-derivational ("harmonic parallelism"). In classical derivational, rule-based phonology, two kinds of rule interactions can be called opaque, viz., counter-bleeding and counter-feeding. Consider counter-bleeding first. Suppose that there are two phonological rules R_α and R_β (both independently motivated). R_α would destroy the context that R_β needs to apply; i.e., R_α would bleed R_β. However, the empirical evidence in a given language L shows that R_α does in fact not bleed R_β, i.e., R_α counter-bleeds R_β. In the derivational approach, this implies that R_β must apply in L before R_α has a chance to apply and remove the former rule's context of application. In contrast, in a counter-feeding relation, R_α creates a context that R_β needs to apply; i.e., R_α would feed R_β. However, the empirical evidence in language L shows that R_α does in fact not feed R_β; i.e., R_α counter-feeds R_β. Again, in the derivational approach, this can be handled by rule ordering: R_β must be ordered before R_α in L so as to ensure that the former rule does not find its context of application. The two instances of

opaque rule interaction have in common that it does not seem to suffice to exclusively consider the input and the ultimate output, as one is forced to do in non-derivational approaches. Rather, reference to an intermediate derivational stage seems to be indispensable. This problem can be illustrated on the basis of an instance of counter-bleeding in Tiberian Hebrew (see McCarthy (1999); for other relevant cases, see, e.g., Kenstowicz & Kisseberth (1979)).

Tiberian Hebrew has a rule of epenthesis into final consonant clusters, and a rule of glottal stop (ʔ)-deletion outside onsets. An effect of the first rule is shown in (25-a), and an effect of the second rule in (25-b). The question of rule interaction arises in contexts where a glottal stop is part of a coda in the underlying representation (i.e., the input). If ʔ-deletion applies first, it bleeds epenthesis. However, as illustrated in (25-c), this is not the case in Tiberian Hebrew. Rather, ʔ-deletion and epenthesis are in a counter-bleeding relation. In derivational systems, this implies that epenthesis obligatorily applies before ʔ-deletion.

(25) a. Epenthesis:
/melk/ → mel̲ex "king"

b. ʔ-Deletion:
/qaraʔ/ → qa̲ra̲_ "he called"

c. Interaction – Epenthesis → ʔ-Deletion:
/dešʔ/ → deše̲ʔ → deše_ "tender grass"

The problem in non-derivational, parallel optimality theory now is that the counter-bleeding effect cannot easily be simulated. Simplifying a bit, the epenthesis rule can be decomposed into a constraint ranking *COMPLEX ≫ DEP-V; the ʔ-deletion rule translates into a ranking CODACOND ≫ MAX-C. Given an input like /dešʔ/, optimization will not determine *deše* as the grammatical output, but the ill-formed **deš* that deletes ʔ (in violation of MAX-C) but fails to insert *e* (because *COMPLEX can be satisfied without violating DEP-V, given ʔ-deletion). Essentially, the result of optimization is identical to the result one would get under a transparent, non-opaque rule interaction (i.e., bleeding).

McCarthy's (1999) solution to this problem is based on the insight that even though there is no intermediate stage between an input and an (optimal) output in standard optimality theory, all relevant properties of an intermediate stage are represented in a suboptimal output that is part of the same candidate set as the optimal output. Assuming that this failed candidate (called the ☸-candidate) can be determined in a principled way, it can fulfill the same function as an intermediate representation in derivational approaches. By invoking a certain type of output/output faithfulness constraint, its properties can crucially determine properties of the actual (optimal) output; output/output faithfulness of this type is called "sympathy." In the case at hand, the intermediate stage of the derivation in (25-c), viz., *deše*ʔ, corresponds to a candidate that competes with (and loses against) the optimal form *deše*, but that is more faithful to the input /dešʔ/ in one respect – it maintains the glottal stop. *deše* blocks *deš* because it is more faithful to the candidate that corresponds to the intermediate step in a derivational approach. In what follows, I give a more detailed illustration of this sympathy account.

Consider first the basic tenets of sympathy theory.

(26) *Sympathy theory*:

a. Some (input/output faithfulness) constraint F_i divides the candidate set C into two

non-overlapping subsets: C_{+Fi} is the class of candidates that respect F_i, and C_{-Fi} is the class of candidates that violate F_i. F_i is called a "selector".

b. The optimal member of C_{+Fi} is called $\bullet_{Fi}$. This is the ☸-candidate selected by F_i. $\bullet_{Fi}$ does not have to be optimal in C.

c. There are ☸-faithfulness constraints that demand faithfulness (sympathy) to a $\bullet_{Fi}$ candidate, rather than to the input itself. If high-ranked, these ☸-faithfulness constraints can render non-transparent candidates optimal and thereby account for opacity effects.

In the case of counter-bleeding that is currently under discussion, the selector (input/output) faithfulness constraint is MAX-C. Given an input /*deš*?/, the optimal output among the candidates that satisfy MAX-C is *deše*? (which corresponds to the intermediate stage in a derivational approach). Hence, *deše*? is $\bullet_{Max-C}$, the ☸-candidate. The relevant sympathy (output/output faithfulness) constraint is MAX-V_{Max-C}: This constraint prohibits the deletion of a vowel of the ☸-candidate determined by MAX-C, viz., *deše*?. Due to the high ranking of MAX-V_{Max-C}, the optimal output in the whole candidate set must preserve the vowels of the ☸-candidate. This excludes the "transparent" output *deš* which, as we have seen, is wrongly classified as optimal in standard optimality-theoretic approaches, and correctly predicts the "opaque" output *deše* to be optimal: *deše* has a better constraint profile than the ☸-candidate *deše*? itself since it avoids the latter's CODA-COND violation (it violates the lower-ranked MAX-C constraint, though). The competition just sketched is illustrated in tableau T_9, where O_4 is the ☸-candidate, O_2 is the wrong winner under an approach that does without sympathy (which I indicate here by ☛), O_1 is optimal under the sympathy approach, and O_3 and O_5 are other ill-formed candidates that are classified as suboptimal under both approaches.[32]

T_9: Counter-bleeding and sympathy in Tiberian Hebrew in McCarthy (1999)

Input: /deš?/	☸MAX-V_{Max-C}	*COMPLEX	ANCHOR	CODACOND	MAX-C	DEP-V
☞O_1: deše					*	*
☛O_2: deš	*!				*	
O_3: deš?e			*!			*
☸O_4: deše?				*!		*
O_5: deš?	*!	*		*		

On a more general note, sympathy theory provides a means to impose properties of a suboptimal output O_i on the optimal output O_j. As noted above, this is exactly what is needed to solve the problem in tableau T_8. On this basis, let us return the question of how morphological Case can be brought about without actual scrambling in scrambling languages.

[32]Note that ☸O_4 would more adequately be represented as ☸$_{Max-C}O_4$; there may be other sympathy constraints which require faithfulness to other ☸-candidates. The simplification here is unproblematic as long as we are only concerned with one sympathy constraint. Also note that there are several other rankings that would yield the desired outcome; the ranking in T_9 is just one possibility.

4.2. Sympathy, Scrambling, and Morphological Case

Vowel epenthesis in Tiberian Hebrew and morphological Case in German and Russian are similar in that both phenomena are "opaque": Faithfulness to the input does not seem to suffice, and faithfulness to a failed competitor, the sympathy candidate, is called for. However, there is also a basic conceptual difference between the two cases: In the syntactic case, the sympathy candidate does not encode an *earlier* stage in a derivation of an optimal candidate, but a *later* stage that is in fact never reached by the optimal candidate: Morphological Case is triggered in a candidate that has scrambling, and this property is carried over via sympathy to an optimal candidate which has no scrambling. This main difference is also responsible for another difference, one that concerns the selector: Given that the optimal candidate is in fact "closer" to the input than the sympathy candidate (because scrambling does not take place in the former), it is clear that the selector cannot be an input/output faithfulness constraint in the case at hand; rather, it must be a markedness constraint that favours the candidate with scrambling. It is not clear whether these differences should be viewed as problematic. Whereas McCarthy's (1999) original motivation is to account for counter-bleeding and counter-feeding in phonology, and ☸-candidates therefore typically encode intermediate stages of derivations, the sympathy approach as such is completely neutral as to the nature of ☸-candidates. Indeed, sympathy analyses have been developed for other kinds of phonological phenomena, unrelated to opacity, and in line with this, it has been argued that markedness constraints can also act as selectors, for both conceptual and empirical reasons (see Itô & Mester (1997)). Thus, I take the hypothesis that markedness constraints can be selectors to be tenable.[33]

Then, it must be clarified what the sympathy and selector constraints are in the case at hand. I would like to suggest that (27-a) is the relevant sympathy constraint, and, consequently, that (27-b) acts as the selector.

(27) a. ☸MAXCASE$_{EP}$:
Morphological Case of $\bullet_{EdgePhase}$ must be preserved.
b. EDGEPHASE:
An NP must be at the edge of a phase.

Chomsky (2000; 2001) observes that vP and CP are the two "propositional" constituents of clauses; he calls these special derivational units "phases."[34] The edges of phases are the

[33]Note also that syntax differs from phonology in being an information-preserving system; devices like traces, selectional features and so forth ensure that virtually no input information gets lost in syntactic outputs. Consequently, it is extremely difficult to come up with convincing instances of syntactic counter-bleeding or counter-feeding that are not straightforwardly accountable for in non-derivational approaches, without resort to a concept like sympathy. Therefore, if sympathy is to play a role at all in syntax (as, arguably, it should do, for reasons of symmetry alone), it seems that it must involve faithfulness to suboptimal outputs that do not correspond to intermediate derivational stages, and that are not selected on the basis of their greater similarity to the input.

[34]Chomsky also assumes that the edge of vP qualifies as an obligatory intermediate landing site for further movement, like A-bar movement into the next phase and pronominal object shift in the Scandinavian languages. If we want to make this assumption in the present approach, it seems that we have to ensure that CASE only applies to those NPs at the edge of vP that stay in this position throughout the derivation. Otherwise, Mainland

prominent positions for NPs in a clause.[35] Of course, this constraint is often violated in well-formed outputs. From this we can conclude that EDGEPHASE is typically low-ranked (a ranking below SCRCON would be predicted if the latter is derived from the former by local conjunction, as speculated in the last footnote).

EDGEPHASE divides the candidate set into two classes: In one are the candidates that have all NPs in an edge position; in the other one are the candidates that have at least one NP in situ. Among the vP candidates that have all NPs at the edge of vP, the optimal one will have morphological Case if the ranking is CASE $\gg$ DEPFUNC. The sympathy constraint ☸MAXCASE$_{EP}$'s task now is to require faithfulness of candidates with NPs in situ to the morphological Case specification of this ☸-candidate with all NPs at the edge of vP. This follows if ☸MAXCASE$_{EP}$ is ranked higher than DEPFUNC. As shown in tableau T_{10}, the problem encountered in tableau T_8 is now solved: O_4 (with morphological Case on all NPs even though they are in situ) now blocks O_1 (without morphological Case on the NPs in situ) because the former candidate's DEPFUNC violations are required to avoid the latter candidate's fatal ☸MAXCASE$_{EP}$ violation. O_{12} is the ☸-candidate that imposes morphological Case on the optimal candidate. O_{12} itself is optimal within the subset of candidates that satisfy EDGEPHASE, but suboptimal in the whole candidate set (due to the fact that, by assumption, there is no trigger for scrambling, and a STAY violation is therefore fatal).

This analysis correctly predicts that all NPs bear morphological Case in scrambling languages like German, Russian, and Icelandic.[36] It also accounts for the fact that no NP bears morphological Case in scrambling languages like Bulgarian and Dutch: A ranking DEPFUNC $\gg$ CASE invariably leads to ☸-candidates without morphological Case in these languages, and even with a high ranking of ☸MAXCASE$_{EP}$, faithfulness to the morphological Case specification of these candidates then requires the absence of morphological Case on optimal candidates with NPs in situ.[37] However, a problem arises with non-scrambling lan-

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Scandinavian pronominal object shift and English *wh*-movement could also trigger morphological Case marking. Morphological Case on a topicalized object NP in German would then arise in the same way as on an NP in situ. Restricting CASE to surface positions of NPs would be directly compatible with a global approach to optimization, but would demand certain additional assumptions under a local approach (see footnote 9): At the vP optimization stage, one has to know already whether an NP in vP will move further in the derivation or stay in this position. That said, it seems to me that assuming the edge of vP to be an obligatory escape hatch for further movement is by no means unproblematic (in contrast to what holds for CPs); see Heck & Müller (2000) for an argument against this view.

[35] Arguably, the SCRCON constraints can be derived from EDGEPHASE on the basis of local constraint conjunction (see Legendre, Smolensky, & Wilson (1998)). The success of such an enterprise depends on a number of assumptions concerning, i.a., the precise nature of SCRCON constraints like those in (7), and the issue of local vs. global optimization – assumptions that I chose to leave open (see section 2.2 above).

[36] Unless, that is, independent morpho-phonological constraints force the absence of a Case marker for all NP-internal items, as in German constructions involving bare proper names, or bare (non-dative) plurals; see Müller (2001b). In those contexts, CASE must be violated with an NP in Specv; consequently, an NP in situ will show no Case marker either.

[37] As noted by Gisbert Fanselow (p.c.), if we were to assume in addition that a sympathy constraint ☸MAXCASE$_{Stay}$ exists, where STAY acts as a selector, languages of the Bulgarian or Dutch type could also be accounted for in terms of sympathy: Given a high ranking of ☸MAXCASE$_{Stay}$, a candidate with NP scrambling will not exhibit morphological Case because it must be faithful to the candidate with NP-in situ, which

T_{10}: Morphological Case without scrambling (German, Russian): sympathy

Input: $NP_{1,[-]}$ $NP_{2,[-]}$, ...	SCR CON	STAY	CASE	☸MAX $CASE_{EP}$	DEP FUNC	EP
☛O_1: [$_{vP}$ NP_1 v [$_{VP}$ V NP_2]]				*!*		**
O_2: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V NP_2]]				*!	*	**
O_3: [$_{vP}$ NP_1 v [$_{VP}$ V $NP_{2,acc}$]]				*!	*	**
☞O_4: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V $NP_{2,acc}$]]					**	**
O_5: [$_{vP}$ NP_2 NP_1 v [$_{VP}$ V t_2]]		*!	*	**		*
O_6: [$_{vP}$ NP_2 $NP_{1,nom}$ v [$_{VP}$ V t_2]]		*!	*	*	*	*
O_7: [$_{vP}$ $NP_{2,acc}$ NP_1 v [$_{VP}$ V t_2]]		*!		*	*	*
O_8: [$_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v [$_{VP}$ V t_2]]		*!			**	*
O_9: [$_{vP}$ NP_1 NP_2 t_1 v [$_{VP}$ V t_2]]		*!*	**	**		
O_{10}: [$_{vP}$ $NP_{1,nom}$ NP_2 t_1 v [$_{VP}$ V t_2]]		*!*	*	*	*	
O_{11}: [$_{vP}$ NP_1 $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		*!*	*	*	*	
☸O_{12}: [$_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]		*!*			**	

guages like English. Assuming hypothesis (1-b), we want to derive that a non-scrambling language can never have morphological Case on NPs, irrespective of the ranking of CASE and DEPFUNC. But this does not follow anymore. Suppose that an English-type language (without scrambling, due to STAY ≫ SCRCON) has a ranking ☸MAXCASE_{EP} ≫ CASE ≫ DEPFUNC. As shown in tableau T_{11}, this would wrongly predict Case morphology on NPs, despite the ranking STAY ≫ SCRCON. The reason is that even though a scrambling output like O_{12} has no chance to be optimal in such a language, it is clearly the most harmonic one among the candidates that satisfy EP; hence, it is the ☸-candidate. Sympathy will then classify O_4 instead of O_1 as the optimal candidate. Thus, we would end up with an English-type language where morphological Case shows up on NPs in situ despite a lack of scrambling.[38]

As a key to a solution of this problem, note that there is an important difference between O_{12} in T_{10} and O_{12} in T_{11}: In a language with a ranking SCRCON ≫ STAY, O_{12} can itself be an output that is optimal (grammatical); in a language with a ranking STAY ≫ SCRCON, it cannot be. Thus, we are led to the conclusion that ☸-candidates must themselves be optimal outputs in syntax.[39] This would contrast with the situation in phonology, where ☸-candidates

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lacks a Case marker under any ranking of CASE and DEPFUNC. Obviously, though, postulating such an additional ☸-constraint is not necessary in the present approach, the ranking DEPFUNC ≫ CASE being sufficient to account for languages that have scrambling but no morphological Case. More generally, I take it that a proliferation of sympathy constraints should be avoided if possible – ideally, the postulation of a ☸-constraint should be motivated in some way. In line with this, I have argued above that EDGE PHASE is special in so far as it forces an NP into a prominent NP position in a clause, viz., the edge of a phase, a position whose relevance for NPs is independently established.

[38]Whether or not there is a [scr] specification in the input is irrelevant, given STAY ≫ SCRCON. T_{11} presupposes that there is no trigger for scrambling in the input, but given STAY ≫ SCRCON, the outcome would be identical if there were an input specification that demands scrambling (see tableau T_7): O_4 rather than O_1 would be predicted to be optimal.

[39]This is vaguely reminiscent of a mechanism in Wilson's (2001) system of bidirectional optimization, where only those outputs are subjected to a given expressive optimization procedure that are optimal with respect to *some* interpretive optimization procedure (not necessarily the one that leads to the expressive optimization procedure at hand).

T_{11}: Morphological Case without scrambling options: a wrong prediction

Input: $NP_{1,[-]}$ $NP_{2,[-]}$, ...	STAY	SCR CON	CASE	❁MAX $CASE_{EP}$	DEP FUNC	EP
☛O_1: [$_{vP}$ NP_1 v [$_{VP}$ V NP_2]]				*!*		**
O_2: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V NP_2]]				*!	*	**
O_3: [$_{vP}$ NP_1 v [$_{VP}$ V $NP_{2,acc}$]]				*!	*	**
☞O_4: [$_{vP}$ $NP_{1,nom}$ v [$_{VP}$ V $NP_{2,acc}$]]					**	**
O_5: [$_{vP}$ NP_2 NP_1 v [$_{VP}$ V t_2]]	*!		*	**		*
O_6: [$_{vP}$ NP_2 $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!		*	*	*	*
O_7: [$_{vP}$ $NP_{2,acc}$ NP_1 v [$_{VP}$ V t_2]]	*!			*	*	*
O_8: [$_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v [$_{VP}$ V t_2]]	*!				**	*
O_9: [$_{vP}$ NP_1 NP_2 t_1 v [$_{VP}$ V t_2]]	*!*		**	**		
O_{10}: [$_{vP}$ $NP_{1,nom}$ NP_2 t_1 v [$_{VP}$ V t_2]]	*!*		*	*	*	
O_{11}: [$_{vP}$ NP_1 $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]	*!*		*	*	*	
❁O_{12}: [$_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v [$_{VP}$ V t_2]]	*!*				**	

do not have to be optimal candidates.[40]

As it stands, the status of O_{12} as an optimal output in a scrambling language cannot be determined on the basis of T_{10}, where O_{12} is suboptimal, but only on the basis of another competition with appropriate input specifications that trigger scrambling (see T_5); thus, the procedure is translocal (or transderivational) in a way that assimilates the analysis to other, non-sympathetic instances of output/output faithfulness (see Benua (1997)). This consequence results from the fact that I have so far presupposed a Büring/Choi type approach to scrambling according to which distinct semantic specifications concerning features like [±top] and [±foc] give rise to different inputs, and to different candidate sets. This view is abandoned in Müller (1999). In this latter approach, a liberal (disjunctive) notion of tie is adopted (for unrelated reasons having to do with certain undergeneration problems alluded to above) that ensures that O_4, O_8, and O_{12} can all be optimal within one and the same candidate set. In such an approach, the ❁-candidate O_{12} can be optimal within the same candidate set in which O_4 and O_8 are optimal, and the latter two outputs derive their morphological Case from O_{12} via the sympathy constraint ❁MAXCASE$_{EP}$. Consequently, translocality can be avoided in the determination of ❁-candidates.[41]

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[40]Indeed, ❁-candidates are usually suboptimal in the phonological applications that McCarthy (1999) discusses. However, it is worth noting that there is nothing that would preclude optimality of ❁-candidates; and McCarthy explicitly argues for this in the case of nasal harmony in Sea Dayak (based on Kenstowicz & Kisseberth (1979)).

[41]Still, one may ask whether the present approach in terms of sympathy could not be replaced by some other output/output faithfulness approach that does without this concept. It is clear what an alternative output/output faithfulness approach would have to ensure: An optimal output candidate O_i has to be identified that an in-situ candidate O_j (like O_4 in T_{10}) must be faithful to with respect to morphological Case. However, standard identification procedures as they are known from non-sympathetic output/output faithfulness approaches cannot successfully pick out O_i: O_i is not inherently privileged vis-à-vis O_j (as in base/reduplicant and base/truncation relations), and notions like paradigm uniformity do not help either because there are no paradigms in syntax (indeed, given the analysis in Müller (2001b), paradigms as independent objects do not even exist in the domain of Case morphology). The problem is that it is not an *intrinsic property* of O_i that turns it into a candidate that O_j must be faithful to; rather, it is the *property of being optimal among the candidates that have all NPs in*

A further potential problem involves cases where it looks as though scrambling is illegitimate in a language like German or Russian. Suppose that we have evidence that NP α cannot scramble in the syntactic context β. Then, an output with α-scrambling can never be optimal in β, and α in situ should not bear morphological Case, as argued for a non-scrambling language like English. In such a situation, additional assumptions would be called for that impose further restrictions on what is a suitable ☸-candidate. However, it seems to me that evidence that unambiguously exemplifies this situation is not as straightforwardly available as one might think. For instance, many of the apparent restrictions on NP scrambling in German can be shown to be either spurious, or intimately related to the idea that scrambling must permute the basic order of NPs – an idea that I do not adopt here on independent grounds, see above. Thus, all the ☸-candidates discussed here have all NPs in scrambling positions, which re-establishes (or, at least, may re-establish) the base order.

Consider, as an example, the interaction of weak crossover and scrambling in German. As noted by, e.g., Lee & Santorini (1994), scrambling of a direct object NP across an indirect object NP as in (28-b) is ill formed, due to the WEAK CROSSOVER CONSTRAINT (WCC) that requires a syntactic A-binder for a pronoun that is interpreted as a variable; compare (28-a). Hence, if (28-b) is the ☸-candidate, its suboptimality will pose a problem because it is unclear how (28-a) can then derive morphological Case from it (given that this is what makes morphological Case impossible in English). However, (28-b) cannot be the ☸-candidate in the first place, because it still violates EDGEPHASE. Rather, the ☸-candidate is (28-c), where all NPs have undergone scrambling, and reassembled in an order that respects the WCC.

(28) a. dass jede Professorin$_1$ [$_{NP}$ jedem Studenten]$_2$ [$_{NP}$ seine$_2$ Dissertation]$_3$
that every$_{nom}$ professor every$_{dat}$ student$_{dat}$ his$_{acc}$ dissertation
gegeben hat
given has

b.?*dass jede Professorin$_1$ [$_{NP}$ seine$_2$ Dissertation]$_3$ [$_{NP}$ jedem Studenten]$_2$ t$_3$
that every$_{nom}$ professor his$_{acc}$ dissertation every$_{dat}$ student$_{dat}$
gegeben hat
given has

c. dass jede Professorin$_1$ [$_{NP}$ jedem Studenten]$_2$ [$_{NP}$ seine$_2$ Dissertation]$_3$ t$_1$
that every$_{nom}$ professor every$_{dat}$ student$_{dat}$ his$_{acc}$ dissertation
t$_2$ t$_3$ gegeben hat
given has

Assuming that most of the apparent counter-evidence can be accounted for in this way, at least as long as we restrict ourselves to NP arguments of V, we may tentatively conclude that ☸-candidates must be optimal in syntax (perhaps, more generally, in domains where opacity is not involved), with no further qualification involved.

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scrambling positions. Thus, the identification procedure for O_i is best done by a constraint that forces NPs to be in scrambling positions, and this is exactly what the sympathy approach does.

4.3. Supporting Evidence

There is no inherent reason why a sympathy constraint like ☼MAXCASE$_{EP}$ should be ranked high, as it must be in German and Russian. In principle, it can also be ranked below DEP-FUNC. Other things being equal, this would result in a language that has morphological Case only if scrambling takes place, as predicted under the simpler approach without sympathy developed in section 3. Pieces of empirical evidence that are intriguing in this context are instances of what is sometimes analyzed as Case marker drop in languages like Japanese, Korean, and Turkish. Interestingly, Case marker drop usually takes place in positions close to (usually, adjacent to) V. This might suggest a reanalysis along the lines of the present approach.

Consider Japanese first. Here, structural Case markers are often left out in casual speech, but only in positions close to the verb; see, e.g., the examples involving a *wh*-object with and without morphological Case in (29-ab), which are taken from Hoshi (1999).

(29) a. John-ga nani(-o)$_1$ tabeta no ?
John$_{nom}$ what$_{(acc)}$ ate Q
b. Nani*(-o)$_1$ John-ga t$_1$ tabeta no ?
what$_{(acc)}$ John$_{nom}$ ate Q

In the present approach, these data can be analyzed as follows. Suppose that Japanese has the rankings SCRCON ≫ STAY and CASE ≫ DEPFUNC, just like German and Russian, but that ☼MAXCASE$_{EP}$ and DEPFUNC are tied; i.e., the rankings ☼MAXCASE$_{EP}$ ≫ DEPFUNC and DEPFUNC ≫ ☼MAXCASE$_{EP}$ are both possible. Then, it is predicted that scrambling will always give rise to morphological Case, whereas an NP in situ must bear morphological Case under the ranking ☼MAXCASE$_{EP}$ ≫ DEPFUNC, and remains without morphological Case (i.e., exhibits "Case marker drop") under the reverse ranking DEPFUNC ≫ ☼MAXCASE$_{EP}$. This correctly accounts for the effect with direct object *wh*-phrases in (29). The effect here can thus be viewed as independent support for the analysis, even though eventually, more needs to be said about other cases – e.g., subject NPs; NPs with oblique Case, which must always be morphologically visible in Japanese; and non-*wh*-phrases.[42]

As noted by Shin-Sook Kim (p.c.), a similar effect shows up in Korean. Data that are similar to those in (29) in Japanese are given in (30). A direct *wh*-object may or may not bear morphological Case in situ; but it must bear morphological Case under scrambling.

(30) a. Suna-ka nuku(-lûl)$_1$ manna-ss-ni ?
Suna$_{nom}$ who$_{(acc)}$ meet-Past-Q
b. Nuku?*(-lûl)$_1$ Suna-ka t$_1$ manna-ss-ni ?
who$_{(acc)}$ Suna$_{nom}$ meet-Past-Q

The examples in (31) illustrate that, in contrast to what seems to be the case in Japanese, the same effect holds for non-*wh*-objects.

[42]For non-*wh*-phrases, Hoshi (1999) assumes that they can be fronted without an overt Case marker because they can be reanalyzed as topics, with an empty topic marker. Such an option is not available for *wh*-phrases because *wh*-phrases are incompatible with a topic interpretation in Japanese.

(31) a. Suna-to kû chaek(-ûl)$_1$ ilk-ess-ta
Suna-also that book$_{(acc)}$ read-Past-Dec
b. Kû chaek?*(-ûl)$_1$ Suna-to t$_1$ ilk-ess-ta
that book$_{(acc)}$ Suna-also read-Past-Dec

(32-abc) show that a scrambled direct object obligatorily bears morphological Case, no matter whether the final landing site is clause-internal or clause-initial:

(32) a. Suna-ka Minsu-eke kû chaek(-ûl)$_1$ chu-ess-ta
Suna$_{nom}$ Minsu$_{dat}$ that book$_{(acc)}$ give-Past-Dec
b. Suna-ka kû chaek?*(-ûl)$_1$ Minsu-eke t$_1$ chu-ess-ta
Suna$_{nom}$ that book$_{(acc)}$ Minsu$_{dat}$ give-Past-Dec
c. Kû chaek?*(-ûl)$_1$ Suna-ka Minsu-eke t$_1$ chu-ess-ta
that book$_{(acc)}$ Suna$_{nom}$ Minsu$_{dat}$ give-Past-Dec

The Korean data lend themselves to the same type of analysis as suggested for Japanese, with roughly the same qualifications concerning, in particular, a strict visibility requirement for oblique Case.

As a final piece of evidence that bears on the present approach, I will briefly consider the distribution of non-specific NP arguments in Turkish (see Kornfilt (2000)). In general, non-specific NPs must show up close to the verb, and they cannot bear the morphological Case marker that one would normally expect them to bear, given their abstract Case. Thus, a non-specific direct object cannot be scrambled, and it must remain without morphological Case, as in (33):

(33) Hasan çocuğ-un-a her akşam bir hikâye oku-r
Hasan child$_{3.sg-dat}$ each evening a story read$_{aor}$

What is interesting here is that with non-specific NPs, the absence of morphological Case is not optional, but in fact obligatory. This, and the fact that non-specific NPs are known not to be able to scramble, may plausibly be taken to suggest that scrambling in Turkish is basically amenable to the analysis given for German and Russian, but that in those cases where scrambling of an NP α is impossible (here: due to a high-ranked constraint against a non-specific interpretation at the edge of vP), there is indeed no suitable ❁-candidate that may impose morphological Case on the optimal output with α in situ, as speculated above. In other words: The view that ❁-candidates must themselves be optimal in syntax is strengthened.

5. Conclusion

Let me emphasize again that what precedes is the elaboration of one of the two hypotheses ((1-b) and (1-c)) that look tenable in light of the cross-linguistic evidence involving scrambling and morphological Case that was presented in section 2. My basic assumption was that the more conservative hypothesis (1-c) (according to which there is no synchronically relevant correlation between morphological Case and scrambling) may ultimately be more likely to prove correct, but that the more radical hypothesis (1-b) (according to which morphological Case presupposes scrambling) is potentially more interesting, and hence worth pursuing. From a more general point of view, this hypothesis is compatible with the general idea that

syntax may directly determine morphology, which has already fruitfully been employed in recent work in optimality-theoretic syntax.

I have argued that there is one fundamental problem with an approach that relies on (1-b): In free word order languages like German or Russian, a given clause may or may not involve scrambling of its NPs; but all NPs bear morphological Case, even if they show up in situ. It seems to me that this problem would be quite severe in standard approaches to syntax; but it can be solved in an optimality-theoretic approach that is enhanced by sympathy theory. Such an approach raises a number of problems, only some of which I have been able to address here. Whether it can be maintained in the light of further evidence remains to be seen.[43]

[43] An obvious problem that I have not said anything about yet concerns morphological Case outside the domain of verbs: in PPs, NPs, and APs. With respect to some cases, it is worth noting that the analysis here leaves open the possibility that morphological Case may also be triggered by other constraints (than CASE or ☸MAXCASE$_{EP}$), in other domains. This is likely to hold for prenominal genitive Case in German and English, and for prepositive Case in Russian, which cannot plausibly be assumed to be related to scrambling to SpecvP (prepositive Case occurs only within PPs, and Russian does not generally permit P stranding by which a PP-internal NP argument might show up at the edge of vP). In addition, some other instances of morphological Case in PPs, NPs, and (attributive) APs may be argued to involve other cases of output/output faithfulness, based on the properties of vP.

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