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Absolute Ungrammaticality[*]

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Absolute Ungrammaticality

1. *Introduction*

Given the principles of optimality theory, there should be a grammatical output for every input. After all, of the possible outputs corresponding to a particular input, the one that is the most harmonic with respect to a set of ranked universal constraints is grammatical by definition. Nonetheless, it appears to be a rather obvious fact that certain constructions have no realization at all in some, or even all, languages. How is this possible, then?

Given structure of the grammar in optimality theory, several types of solutions have been proposed for this problem. An optimality-theoretic grammar consists of two components: a device GEN that generates all possible structural realizations of a particular input and a function EVAL that selects out of this candidate set the structure that is optimal. One possibility therefore is to argue that there are restrictions on GEN such that certain constructions never enter into competition.[1] It is also possible that two candidates score equally on all constraints but one. In that case, the candidate that wins out on this particular constraint will block the other candidate under any constraint ranking. In the terminology of Prince & Smolensky 1993, this is expressed by saying that the latter is harmonically bound by the former. A third possibility is that certain constructions cannot be realized because the lexicon of the language in question lacks the crucial morphemes. Finally, it is possible that under some constraint rankings the optimal candidate is the so-called null parse, that is, a

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[1] One may think of universal conditions on well-formed structure (X-bar theory, Subjacency, etc.) and universal conditions on interpretability like the Θ-Criterion and the ban on vacuous quantification.

candidate that does not realize any of the information contained in the input (cf. Prince & Smolensky 1993). This means that in the relevant language there is in fact an instantiation of the apparently ungrammatical construction, but one which is silent. These solutions to absolute ungrammaticality have been developed to some extent in the phonological literature, but in general the problem still requires considerable attention.[2]

In this paper, we will discuss some cases of absolute ungrammaticality in syntax. The above-mentioned solutions are all valid, but they apply to different instantiations of the general problem of absolute ungrammaticality. The first two (restrictions on GEN and candidates being harmonically bound) apply to different cases of universal ungrammaticality. We will not go into restrictions imposed by GEN here; a case of harmonic boundedness is discussed in section 6. Our main focus will be on constructions that are not universally impossible, but are absent in some languages while present in others. As we will argue in sections 3-5, a number of such cases must be explained by means of the null parse.

A solution of language-specific ineffability that makes use of underparsing in syntax was first proposed by Legendre et al. (1995). Their approach differs from the one we will propose below in that Legendre et al. do not employ the null parse, but rather allow partially underparsed structures to enter into competition. We will briefly discuss the differences between these approaches in section 7.

2. *The Null Parse and Parse Constraints*

Obviously, the question of which structures enter into competition with one another, that is, the exact definition of the candidate set, is very important in optimality-theoretic calculations. In syntax, the issue is complicated by the fact that the targeted semantic representation seems to be relevant for this definition. There seems to be something of a consensus in the literature

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[2] For discussion in phonology see Prince & Smolensky 1993, McCarthy & Prince 1993 and, for some problems, Orgun & Sprouse 1996.

to the effect that only candidates projected from the same set of lexical heads (the numeration) and targeting the same semantic representation should compete with each other. This is not only argued for in optimality-theoretic literature (see, for instance, Grimshaw 1995, Samek-Lodovici 1996 and Ackema & Neeleman 1996a), but also in literature from other frameworks in which competition between structures plays a crucial role (see, for instance, Golan 1993, Reinhart 1995 and Fox 1996). More specifically, following Grimshaw, we assume that what competing candidates must have in common is:

(1) a.   a lexical head and its argument structure

    b.   an assignment of lexical heads to its arguments

    c.   equivalent semantics, including specifications of features such as WH, tense, etc.

The consequence of this definition is that candidates do not need to consist of exactly the same words in order to compete. They may differ in function words (and hence functional structure), as long as the same semantic representation is obtained.[3]

If semantic equivalence is part of the definition of candidate set, it must be established when two candidates can be said to be semantically equivalent. Consider, in this respect, the notion of underparsing. If a structure is projected, GEN may, in some candidates, not realize part of the numeration. In many cases, however, this gives rise to a candidate whose semantics are different from those candidates in which the entire numeration is realized. Given a numeration like (2a), it will be clear that realizing or not realizing *Mary* affects the

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[3] Since using different lexical words will usually result in different semantics, one may wonder if it is not possible to abandon the requirement of identical numerations altogether (see Broekhuis & Dekkers, this volume). We will not discuss this issue here, but some potential problems should be noted. For example, idioms (*kick the bucket*) would compete with semantically equivalent nonidiomatic expressions (*die*). So would syntactic and morphological realizations of the same argument structure (*driver of trucks* versus *truck driver*). Since such expressions coexist, while they differ almost certainly in their evaluation (given their completely different structures), some notion of numeration seems necessary.

interpretation considerably. Hence, (2b) and (2c) are not in the same candidate set and neither can rule out the other.

(2)   a.   {I, see, Mary}

        b.   I see Mary

        c.   I see

The condition of semantic equivalence thus has the consequence that within one candidate set, underparsing of contentful elements is blocked.

There is one exception to this, however. If nothing of the numeration is realized, a candidate is obtained that has no syntactic structure at all. This candidate, the so-called null parse, consequently is not fed into the interpretational component (or, if it is, it does not receive any interpretation). It is an open issue which implications the condition of interpretational equivalence has for candidates that do not have an interpretation in the first place. We interpret the condition such that it removes from the candidate set those candidates that have a interpretation which deviates from that of the other candidates. Since the null parse does not have an interpretation it cannot have a deviating interpretation either. It is therefore never affected by the condition of semantic equivalence. Hence, every candidate set contains the null parse.

The null parse hardly violates any constraints. Since most constraints define structural wellformedness, a candidate without structure vacuously satisfies them. This raises the question why the null parse is not always optimal.

The answer, of course, is that there are constraints which require the realization of certain elements of the numeration. These belong to a family of constraints, usually referred to as Parse (Prince & Smolensky 1993). Whereas it is successful on the other constraints, the null parse violates the Parse constraint.

As remarked, Parse is not a monolithic constraint. Rather, there are various constraints that "protect" specific elements in the numeration. As we will illustrate below, instantiations

of the general constraint include Parse-Passive and Parse-WH. However, it is unlikely that a constraint like Parse-*John* exists. In other words, not every imaginable instantiation of the Parse constraint occurs. We propose that Parse may only refer to specific morphological features of elements in the numeration and not to their lexical semantic content, for instance.

Note that this does not mean that elements like *John* can be left unparsed without repercussions. As we have just argued, omission of such content words alters the semantics of the candidate and hence puts it outside the relevant candidate set. In fact, one cannot possibly express the semantics of an element like *John* without parsing it.

Let us now return to the main issue of this paper: absolute ungrammaticality. The null parse's membership in every candidate set is relevant for this issue, because the low ranking of the parse constraint(s) can lead to the absence of certain structures in a language. As Prince & Smolensky (1993:176) remark, "[...] it is clear that assigning null structure to an input is one means a grammar may use to prevent certain structures from appearing in the output. The null parse is a possible candidate which must always be considered and which may well be optimal for certain particularly problematic inputs".

The general form of the argument is as follows. Consider the interaction of Parse-F (where F is some morphological feature) with some Constraint X, and suppose there are only two candidates: the null parse and a candidate C that parses F but violates Constraint X. Under such conditions, the ranking of Parse-F with respect to Constraint X determines whether candidate C or the null parse will be selected as optimal. Low ranking of Parse-F has the consequence that a language will lack C:

(3)

Input with feature F	Constraint X	Parse-F
Candidate C	*!	
+ 0		*

In this way, language-specific ineffability can be explained. We will illustrate this with some concrete cases in the next sections. (A morphophonological application of this idea is discussed by Kager, this volume).

3. *Multiple WH-Questions*

In many languages, questions can be formed that contain more than one WH-word, as in the English example in (4).

(4)   Who saw what?

There is cross-linguistic variation in the distribution of the WH-words and the verb in such multiple questions (for discussion see Ackema & Neeleman 1996a). What we are concerned with here is how languages can be dealt with in which no pattern at all exists for multiple questions. Irish is of this type, as shown by McCloskey (1979:56,71). It allows simple questions like (5a), but multiple questions like (5b-b') are ungrammatical.

(5)   a.   Cén rothar aL ghoud an garda?
               Which bicycle COMP stole the policeman
        b.   *Cé aL rinne caidé?
               Who COMP did what
        b'.   *Cé caidé aL rinne?
               Who what COMP did

Given the argument of section 2, if the ungrammaticality of (5b,b') is to be ascribed to the null parse being the optimal output for a multiple question in Irish, there must be a constraint that is violated in multiple questions and that interacts with a member of the family of Parse

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constraints. The Parse constraint that is relevant in questions is Parse-WH (WH being a feature that is morphologically identifiable). The other constraint that is relevant is Grimshaw's (1995) constraint that requires operators to appear in a specifier position (Op-Spec). Simplifying things considerably, let us assume that WH-operators can only satisfy this constraint if they appear in a suitable, i.e. [+WH], specifier position. Furthermore, let us adopt the standard assumption that sentences contain only one specifier position that can be [+WH], namely spec-CP.

Consider now sentences containing more than one WH-operator. Op-Spec requires all these operators to be in spec-CP. However, due to limitations on specifiers, in practice only one WH can be moved there.[4] This means that in a multiple question Op-Spec is always violated, except by the null parse (which does not contain any WH-operator). If Parse-WH is outranked by Op-Spec, the null parse will therefore be optimal. This explains the absence of multiple questions in a language like Irish:

(6)   *Irish multiple questions*

	Op-Spec	Parse-WH
[$_{CP}$ WH C [$_{VP}$ .. WH]]	*!	
+ 0		*

In a simple question, Op-Spec is satisfied by WH-movement to spec-CP. The resulting candidate therefore is to be preferred over the null parse, since it does not violate Parse-WH. Hence, Irish does have simple questions:

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[4] This is not contradicted by those languages in which all WHs are fronted, since even in those cases that the WHs form a cluster in spec-CP, only one WH will be the actual specifier of CP, with the others adjoined to it (cf. Rudin 1988). It is plausible that elements adjoined to a specifier do not satisfy Op-Spec, since they do not occupy a specifier, but rather an adjunct position.

(7)   *Irish simple questions*

	Op-Spec	Parse-WH
+ [$_{CP}$ WH C [$_{VP}$ ..]]		
0		*!

If Parse-WH outranks Op-Spec, the English pattern results, with both simple and multiple WH-questions.

Recall that partial underparsing usually expels the resulting candidate from the relevant candidate set. This is the case here as well. A candidate in which only one WH-operator is realized of a numeration containing more than one such operator cannot receive an interpretation as a multiple question. It therefore falls outside the relevant candidate set.

Obviously, the above analysis is a simplification, since Op-Spec alone cannot explain the various patterns of question formation in those languages that do have multiple questions. We refer to Ackema & Neeleman 1996a for discussion of this issue.

If we consider the line of argumentation developed in this section, a general issue arises concerning the interaction of parse constraints with other parse constraints. Suppose that a constraint Parse-X dominates Op-Spec in a language like Irish (where Op-Spec dominates Parse-WH). Then, a multiple question would be parsed after all if, apart from the WH-features, the input also contains the feature X. Thus, we predict that certain features will not be realized, unless they happen to cooccur with certain other features. Some of the interactions thus predicted seem to be improbable, however, a complication to which we will return in section 8.

4. *Passive*

In the previous section we discussed a case where a Parse constraint interacts with one other constraint. In this section we will turn to a slightly more complicated situation, namely one in

which a Parse constraint crucially interacts with two other constraints. We will show that, as a result, the construction under discussion need not be either absent or present in a language. It may, in some languages, surface only if the input meets certain conditions (namely if the verb is transitive). The construction under discussion is the passive.[5]

A fundamental property of passives is that the external Θ-role of the verb is no longer available for the subject position and that, as a consequence of this, the subject position is nonthematic. Let us consider which syntactic constraints are relevant for such an input.

The first is the EPP. This constraint says that inherently predicative categories like VP must have a subject. The notion of subject can be defined in terms of local A-binding (cf. Williams 1994). Hence, the EPP is satisfied if a co-indexed referential category c-commands VP.

(8)   *EPP*

        VP must be A-bound

Following Marantz (1992) and others, we assume that this condition is the trigger for A-movement if no category is base-generated in subject position.[6]

Next to A-movement, expletive insertion is often argued to save a structure from violating the EPP. If the expletive has an associate, this is correct: the expletive inherits the referential index of its associate and can hence bind VP. If there is no associate, however, the

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[5] This section is based on Ackema & Neeleman 1996b.

[6] Strictly speaking, the formulation of the EPP in (8) cannot be correct, since in some constructions an underlying object can be promoted to subject without A-movement (although A-movement is always a possibility). Examples are nominative-dative inversion in the Germanic OV-languages (cf. Den Besten 1985, Weerman 1989) and the possibility that the argument of an unaccusative verb remains in situ in pro drop languages like Italian (cf. Rizzi 1982, Belletti 1988). It would take us too far afield to discuss this issue here, but it must have one of two implications. Either constructions in which A-movement is optional must invoke violations of Stay in any case, or Stay only excludes promotion of the object to subject in languages where movement is required for this, that is, VO-languages without Italian-style pro drop.

expletive has no referential index and thus is not a potential binder. This means, crucially, that impersonal passives as in (9) violate the EPP.

(9)   a.   Er wordt gedanst   (Dutch)

                there is danced

        b.   Es wurde getanzt   (German)

                It was danced

In fact, it has been argued before that impersonal passives are subjectless sentences. Siewierska (1984) points out that in most languages with impersonal passives no expletive is inserted.[7] In those languages which do have an expletive in impersonal passives, this element is inserted for other reasons than to satisfy the EPP. This is straightforwardly shown by the fact that in German the expletive appears only to satisfy the V2 constraint. It occurs exclusively in first position in main clauses. Whenever some element is topicalized or when the V2 constraint does not play a role (namely in embedded clauses), insertion is prohibited.[8]

So, the EPP plays a role in passive formation in that it requires NP raising. Given that movement can hence be involved in passives, another very general constraint comes into play, namely the constraint Stay, which forbids movement (cf. Grimshaw 1995).

(10)   *Stay*

       Do not move

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[7] We assume that empty expletives do not exist; see Weerman 1989, Samek-Lodovici 1996 and Picallo 1996.

[8] The distribution of expletives in Dutch impersonal passives is largely identical to that in German. Again, expletive insertion is only obligatory when the V2 constraint must be satisfied through it. The difference with German is that the expletive appears optionally in embedded clauses and in clauses with topicalization. See Bennis 1986 for analysis.

Here, we will follow Grimshaw in interpreting this constraint such that it is violated whenever a trace occurs in the structure. The result is that, in case of simple object-to-subject raising, it is violated once.[9]

Finally, in the explanation of why passives can be absolutely ungrammatical in some languages, a Parse constraint must be involved. As noted in section 2, members of the Parse family in syntax must mention some morphologically identifiable feature. In the case at hand, the constraint has the following instantiation:

(11) *Parse-Passive*

Parse passive morphology

Passive morphology is relevant for the interpretation of a sentence, since the verb's external Θ-role is assigned to it (cf. Jaeggli 1986, Baker et al. 1989). The result is that, although the syntactic subject position is nonthematic in passive, the verb's external Θ-role is still syntactically `active'; it can, for instance, act as controller of an embedded PRO subject. This means that if the passive morphology is not parsed, a construction will result that has an interpretation that deviates from the semantics of a passive. Hence, it is removed from the candidate set. The only candidate that violates (11) and is in the relevant candidate set is the null parse, which belongs to every candidate set.

Let us now consider how these constraints explain the absence of (certain) passives in some languages. As noted by Siewierska (1984:23), "there is no doubt that the passive is not a language universal". There are many languages in which it is not attested at all, either with

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[9] In other work we have interpreted Stay as requiring movement chains to have a minimal length, so the longer the movement, the more violations of Stay (see Ackema & Neeleman 1996a,b). This explains locality effects with both A- and A'-movement. It would have no consequences if we were to interpret Stay in this way as well in the present paper, but for reasons of exposition we leave out the extra violations of Stay this would incur.

transitive or with intransitive verbs. Examples mentioned by Siewierska are Tongan, Samoan and Hungarian.[10]

It should be clear after the last section how the complete absence of passives in these languages should be accounted for: the null parse must be the optimal output for any passive input. Note that the null parse vacuously satisfies both the EPP and Stay. It does not contain a VP, which would need a subject, nor does it involve movement. Hence, if Parse-Passive is outranked by these two constraints, the null parse blocks any candidate that violates one of these, and any parsed passive does exactly that.

First, consider what happens if the input contains a passivized intransitive and the EPP outranks Parse-Passive. With an intransitive there are only two relevant candidates: an impersonal passive and the null parse. The impersonal passive violates the EPP (since it is a subjectless structure), but not Parse-Passive. The null parse violates Parse-Passive, but not the EPP. Therefore, if satisfying the EPP is more important than satisfying Parse-Passive, the null parse wins:

(12)

passive intransitive	EPP	Parse-Passive
__ V-PASS	*!	
+ 0		*

In the case of a transitive, three candidates must be considered: the null parse, an impersonal passive and a personal passive derived by promotion of the object. If, in addition to the EPP,

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[10] This is not to say that in some of these languages there are no constructions in which the verb's external Θ-role is suppressed. However, if this Θ-role is not assigned to passive morphology, but rather not present in syntax at all (due to some presyntactic procedure), the relevant construction does not qualify as a member of the candidate set for passives. There also are languages in which the absence of passive is only apparent, because passive morphology may not have an overt reflex. Such languages have constructions with all characteristics of passives (for instance, an agentive *by*-phrase is possible), but without an overt morphological marker. Examples may be Acehnese and Mandarin Chinese; see Spencer 1991:243-244 and references cited there.

Stay also dominates Parse-Passive, the language in question will also lack passives of transitives. The impersonal passive is suboptimal because it fatally violates the EPP. The personal passive fatally violates Stay since there is movement of an argument to subject position. This leaves the null parse as the optimal candidate. In (13) this is illustrated for one of the two rankings with the relevant characteristic.

(13)

passive transitive	Stay	EPP	Parse-Passive
DP$_i$ V-PASS t$_i$	*!		
__ V-PASS DP		*!	
+ 0			*

In case Parse-Passive outranks both the EPP and Stay, the language obviously has passives of both transitives and intransitives. The mutual ranking between Stay and the EPP then determines whether a personal or an impersonal passive is derived from a transitive (see Ackema & Neeleman 1996b for further discussion).

An interesting situation arises when Parse-Passive is situated between the other two constraints. The ranking Stay >> Parse-Passive >> EPP has the same effects as the ranking Parse-Passive >> Stay >> EPP: it constitutes a grammar that produces impersonal passives of both transitives and intransitives. But the ranking EPP >> Parse-Passive >> Stay has an effect we have not encountered thus far: it constitutes a grammar in which passives are derived from some inputs but not from others.

As we have seen in (12), the null parse is optimal for a passivized intransitive if the EPP outranks Parse-Passive. However, given the ranking just mentioned, in which Parse-Passive dominates Stay, a passive *is* derived from a transitive input. In that case, both the EPP and Parse-Passive can be satisfied at the cost of violating Stay. The result is a personal passive:

(14)

passive transitive	EPP	Parse-Passive	Stay
+ DP$_i$ V-PASS t$_i$			*
__ V-PASS DP	*!		
0		*!	

Of course, this type of language exists. English has personal passives of transitives, but no (impersonal) passives of intransitives:

(15) a.   The house was painted yesterday

      b.   *There was danced yesterday

The fatal character of EPP violations in English contrasts with the existence of impersonal passives in other languages, as in (9). This situation illustrates that the EPP (and other principles) must be parametrized in theories that do not allow for constraint violation. The consequence is that all sentences of a language must have a subject, or none need to have one. This is unattractive, however, since the EPP does seem to be valid in other constructions in the relevant languages. In particular, it accounts for the fact that, if an underlying object is present in a passive, it must be promoted to subject: German, for example, does not have impersonal passives of transitives:

(16) a.   *Gestern ist [$_{VP}$ uns geschlagen worden]
             yesterday is us hit been

      b.   Gestern sind wir$_i$ [$_{VP}$ t$_i$ geschlagen worden]
             yesterday are we hit been

This is exactly the type of situation expected in optimality theory. The EPP, like other constraints, is universal. It is present in every grammar, including that of German. However,

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its effects can only be observed if higher ranked constraints allow this. So, a constraint can have its effects in some constructions while being overruled in others.

To conclude this section, a brief remark on optionality. As a reviewer points out, there are languages in which more than one of the patterns of passive formation discussed above occurs. Spencer (1991:240), for instance, observes that in Ukrainian both a personal and an impersonal passive can be derived from a transitive verb. As the reviewer suggests, this may follow from equal ranking of Stay and EPP (provided that Parse-Passive is ranked highest). Under one interpretation of equal ranking, both the candidate that is optimal given the ranking Parse-Pass>>Stay>>EPP and the candidate that is optimal given the ranking Parse-Pass>>EPP>>Stay are grammatical. For a discussion of potential problems with equal ranking, see Tesar & Smolensky 1993.

5. *Imperfect periphrastic passives*

As we have illustrated in the previous section, optimality theory allows certain peculiarities of the lexicon of a language to be derived from its grammar (see also Prince & Smolensky 1993 and Grimshaw 1995). The fact that certain languages lack passive morphology is not a consequence of an accidental gap in their lexicon. Instead, this gap follows from how the constraints are ranked. Under certain rankings a morpheme, even if it were part of the lexicon of the language, will never be realized. Therefore, it will not be part of the actual lexicon of the language, although, for the sake of the discussion, we may assume that it is part of its `virtual' lexicon.

In this section we will show that a similar line of argumentation can be applied to languages that lack the auxiliaries needed to form nonperfect passives and nonpassive perfects. The consequence is that such languages only have perfect periphrastic passives.

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A language of this type is Russian. Apart from the synthetic *sja*-passive, Russian has a periphrastic passive construction with a past participle. This construction is necessarily perfect, as shown by Kiparsky (1963), Schoorlemmer (1995) and others.[11]

(17) a.   *Naš dom byl stroen izvestnym arxitektorom

                our house was built (by) famous architect

      b.   *Kryša byla kryta otcom

                roof was covered (by) father

(18) a.   Naš dom byl po-stroen

                our house was PF-built

      b.   Zdanie bylo s-neseno

                building was PF-pulled-down

Similar data can be found in Irish and Hindi. So, what is missing in these languages are correlates of the Dutch examples in (19a-b); only the correlate of (19c) exists.

(19) a.   Het huis werd gebouwd door Rem Koolhaas   (nonperfect passive)

                the house was built by Rem Koolhaas

      b.   Rem Koolhaas heeft het huis gebouwd   (perfect nonpassive)

                Rem Koolhaas has the house built

                `Rem Koolhaas has built the house'

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[11] In this section, we use "perfect" to refer to perfect tense rather than to perfective aspect. Thus, we follow Schoorlemmer's (1995:274) conclusion that "Russian participial passives act like a form of perfect tense, which lacks an active counterpart". Note, however, that in Russian there is a correlation between perfect tense and perfective aspect in that perfect tense is limited to sentences with an aspectually perfective verb (Schoorlemmer 1995, chapter 4). Hence, Russian participial passives are also necessarily perfective in the aspectual sense. Schoorlemmer (1995:280-282) notes that some authors allow a few lexically restricted exceptions to this pattern. According to Schoorlemmer, these examples are a result of formal instruction and do not belong to the core grammar.

    c.   Het huis is gebouwd door Rem Koolhaas   (perfect passive)

             the house is built by Rem Koolhaas

             `the house has been built by Rem Koolhaas'

It might be argued that the absence of nonperfect passives and nonpassive perfects is caused by the absence of two auxiliaries that are used in other languages to form the relevant constructions. The problem with this line of argumentation lies in the fact that two accidental gaps in the lexicon must be assumed. However, to the best of our knowledge, there are no languages that lack periphrastic nonperfect passives but have periphrastic nonpassive perfects, or vice versa. Languages either lack both (and only have a periphrastic perfect passive) or have both (next to the periphrastic perfect passive).

This can be explained under the following assumptions. For a start, there is only one verbal past participle, which is both perfect and passive in nature. This is an assumption that can be motivated indepently, as we will now explain. The forms of the perfect and the passive participle are one and the same in languages using a periphrastic construction for both perfect and passive. In languages that do not use participial constructions, perfect and passive morphology are usually distinct. This fact makes it implausible that the almost exceptionless morphological covarience of passive and perfect participles is coincidental. Therefore, various recent syntactic analyses of periphrastic perfects are based on the idea that the participle used in this construction is identical in all respects to the passive participle (see Haider 1984, Hoekstra 1986, Kayne 1993 and Ackema 1995).

The assumption that the verbal past participle is both perfect and passive in nature is supported by the observation that in a language like Dutch, where passive and perfect do not necessarily coincide (see 19), participial constructions lacking an auxiliary must be interpreted as having both properties mentioned. Examples include prenominally and absolutively used participles:[12]

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[12] Constructions with a prenominal participle of an unaccusative (like *de gestorved man* `the died man') seem to be counterexamples to the claim that such constructions are (perfect)

(20) a.   de door Piet geslagen man

the by Piet hit man

`the man that has been hit by Pete'

b.   door het noodweer overvallen kwam Piet drijfnat thuis

by the storm surprised came Pete soaking-wet home

`having been caught in a storm, Pete came home soaking wet'

We conclude that in a periphrastic construction, the past participle has both perfect and passive properties.

What also plays in important role in periphrastic constructions is the notion of relativized head. As argued by Grimshaw (1991) and Williams (1994), a head will project a feature throughout an extended projection, unless there is a higher head specified differently for that feature. In a periphrastic construction, the extended projection contains two verbal heads: the auxiliary and the participle. Since the past participle is both perfect and passive, feature projection from the participle is blocked in case the auxiliary is either nonperfect or nonpassive.

By `nonpassive' we mean that the auxiliary is unergative and assigns an external Θ-role that is covalued with the external Θ-role of the base verb of the participle (see Haider 1984, Hoekstra 1986 and Ackema 1995 for detailed argumentation). Although projection is

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passives. However, the crucial property of passives for the analysis in this section is the absence of an external Θ-role, indicated below by the feature $[-\Theta_{ext}]$. Unaccusative verbs already have this property of their own. (Below we will provide an explanation for why next to *de gestorven man* `the died man' it is impossible to say *de man wordt gestorven* `the man is died'.)

Another potential counterexample is the Italian absolute construction in (i), which, according to Giorgi & Pianesi (1991:20), has an active perfect reading. However, it may well be a passive perfect. The impression that it is active may be caused by the fact that the unrealized agent of the passive is interpreted as "Maria" here (the friends were greeted by Maria). This interpretation is presumably due to pragmatic considerations, since a situation in which Maria leaves her friends after they have been greeted strongly suggests that Maria greeted them.

(i)   Salutati gli amici, Maria parti
       greeted the friends, Mary left

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not literally blocked here (since `passive' and `nonpassive' in this sense are not features), this is an instance of the same process: a higher head overrules the properties of a lower head. The participial morphology absorbs the external Θ-role, whereas the auxiliary adds a covalued one again. Below we will refer to this informally by using the notation "[+/- Θ_{ext}]", and treat it as a feature for ease of exposition.

The two cases in which an auxiliary changes the properties induced by the participle are illustrated in (21) (an nonperfect passive) and (22) (an active perfect).

(21)   AuxP [-Θ_{ext}, -pf]

        Aux [-pf]   PrtP [-Θ_{ext}, +pf]

                                           Prt [-Θ_{ext}, +pf]

(22)   AuxP [+Θ_{ext}, +pf]

        Aux [+Θ_{ext}]   PrtP [-Θ_{ext}, +pf]

                                           Prt [-Θ_{ext}, +pf]

It is plausible that there is a constraint against changing properties of a projection line. The properties of each head in an extended projection must match those of the top node:

(23)   *Project*
            The head(s) of an extended projection and its top node may not have opposite
            values for a feature

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The interaction of this constraint with the Parse-Passive constraint introduced in section 4 explains the difference between languages like Russian and languages like Dutch. In Dutch, Project is ranked below Parse-Passive. This means that, if the input contains a past participle, it will be parsed even if it also contains an auxiliary with opposite feature specification; see (24). Hence, (19a-b) occur as well as (19c).

(24)

aux [-f], participle [+f]	Parse-Passive	Project
+ [$_{AuxP}$ Aux [$_{PrtP}$ Prt]]		*
0	*!	

Note that Parse-Passive requires passive morphology to be parsed. We have already argued that passive morphology is identical to perfect morphology in periphrastic constructions. Consequently, Parse-Passive also requires the realization of the periphrastic perfect.

If the constraints are ranked the other way around, the only periphrastic construction that is allowed is the one where the feature specification of the auxiliary does not conflict with the main verb's properties. This is the perfect passive:

(25)

aux [-Θ_{ext}, +pf], prt [-Θ_{ext}, +pf]	Project	Parse-Passive
+ [$_{AuxP}$ Aux [$_{PrtP}$ Prt]]		
0		*!

Periphrastic active perfects or periphrastic nonperfect passives cannot surface, however. In both cases, one of the features of the auxiliary ([+Θ_{ext}] in the first case, [-pf] in the second) conflicts with a property of the participle:[13]

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[13] A reviewer remarks that Russian does not only lack auxiliary HAVE but possessive HAVE as well. This might be an argument in favour of the hypothesis that the absence of HAVE is an

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(26)

aux [-f], prt [+f]	Project	Parse-Passive
[$_{\text{AuxP}}$ Aux [$_{\text{PrtP}}$ Prt]]	*!	
+ 0		*

To conclude, a construction can be ruled out in a particular language if there is a crucial interaction between a Parse constraint and some constraint(s) that define structural wellformedness. Thus language-specific ineffability can be understood. In the next section we will turn to constructions that are universally impossible. We will develop the analysis of this section further, showing that some combinations of participles and auxiliaries are harmonically bound by constructions without an auxiliary and therefore do not occur at all.

6. *Superfluous Auxiliaries*

Some interesting further predictions concerning participial constructions can be made, given our earlier definition of candidate sets (see (1)). Recall that, according to this definition, constructions with different choices of function words and inflection compete as long as they target the same semantics. This implies that a construction with an auxiliary and a participle is in the same candidate set as one with an active main verb if (and only if) they target the same semantics.

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accidental lexical gap. However, it does not seem to be a universal property of languages that if auxiliary HAVE is lacking, possessive HAVE is lacking as well. In Latin, like in Russian, there is no verbal participial construction with auxiliary HAVE, but there is a possessive verb *habere*. Similar facts hold in Lithuanian and Serbo-Croatian (Maaike Schoorlemmer, p.c.).

Nevertheless, there may be a connection between absence of possessive HAVE and a relatively high ranking of the Project constraint (which is, as explained in the main text, required to rule out auxiliary HAVE). If there is only one verb HAVE, this must be specified as [+perf] in all its usages. In a nonperfect possessive construction, the [+perf] feature may not percolate, in obvious violation of Project. Hence, the interaction of Project and some Parse constraint which wants HAVE to be parsed would determine whether or not possessive HAVE will surface.

From this, it follows that, universally, constructions are ruled out in which the addition of an auxiliary to a participle yields exactly the same feature set as the main verb would have in its nonparticipial form. This is because the construction with the auxiliary violates Project, whereas the construction with the main verb only obviously does not. In this way, (27a) blocks (27b).

(27)   a.   dat Jan$_i$ t$_i$ valt

                  that John falls

        b.   *dat Jan$_i$ t$_i$ wordt gevallen

                  that John is fallen

The unaccusative main verb in (27a) has the properties $[-\Theta_{ext}, -pf]$. The participle of the main verb in (27b) has the properties $[-\Theta_{ext}, +pf]$. These are overruled by the features of the auxiliary, however, which yields a $[-\Theta_{ext}, -pf]$ structure again. The periphrastic structure induces a violation of Project, and will therefore score worse than the nonperiphrastic one, irrespective of how Project is ranked. In (28), the columns of the constraints above Project are shaded, as well as those below it, in order to indicate their irrelevance; the two candidates will not score differently here.

(28)

V $[-\Theta_{ext}, -pf]$	...	Project	...
+ V $[-\Theta_{ext}, -pf]$	...		...
Aux $[-\Theta_{ext}, -pf]$, prt $[-\Theta_{ext}, +pf]$	...	*!	...

Note that a sentence like (29b), derived from an unergative, is not in the same candidate set as (29a). In (29a), the subject is assigned the main verb's external Θ-role; in (29b) no Θ-role can be assigned to it: both the participle and the auxiliary are $[-\Theta_{ext}]$ (*worden* is a $[-\Theta_{ext}]$ auxiliary in Dutch; it occurs in passives). Although in this case the periphrastic

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construction is not blocked by its nonparticipial counterpart, it is uninterpretable since it contains a referential argument without a Θ-role. This, then, is an instance of absolute ungrammaticality induced by an inviolable principle (the Θ-Criterion), that is, a principle which can be assumed to be part of GEN.

(29)   a.   Jan werkt

              John works

      b.   *Jan wordt gewerkt

              John is worked

The fact that participial constructions can be harmonically bound because of a Project violation also explains why no nonperfect counterpart of the auxiliary *have* exists. This would be an auxiliary with the properties $[+\Theta_{ext}, -pf]$. Suppose the participle of an unergative or transitive verb is combined with this hypothetical auxiliary. In that case, Project is violated because the $[-\Theta_{ext}]$ property of the participle is overruled. However, the $[+\Theta_{ext}, -pf]$ properties of the whole construction can also be realized by simply using the main verb in its finite form. Thus, the hypothetical periphrastic construction is blocked:

(30)

V $[+\Theta_{ext}, -pf]$	...	Project	...
+ V $[+\Theta_{ext}, -pf]$	...		...
Aux $[+\Theta_{ext}, -pf]$, prt $[-\Theta_{ext}, +pf]$	...	*!*	...

A similar argument can be made for unaccusatives. In many languages unaccusatives cannot be combined with a $[+\Theta_{ext}]$ auxiliary in the first place. In some languages, however, the perfect of an unaccusative is formed with $[+\Theta_{ext}]$ *have* (see Ackema 1996 for discussion of the difference between the two types of language). Even so, a nonperfect counterpart of *have* is still impossible, also with the participle of an unaccusative. This is because Project is

violated as a result of the [-pf] feature of the auxiliary, whereas the properties of the input can also be realized by the main verb in its finite form without violating Project.

One may wonder now why auxiliaries are ever used. Either they induce violations of Project (as in (19a-b)/(24)) or they double the information encoded by the participle (as in the perfect passive, see (25)). The reason that they do in fact exist lies in morphological restrictions that make it impossible to attach more than one inflectional marker to a single verb in certain languages. In order to create a perfect or passive in such languages, an auxiliary must be inserted. This hosts the finite (or nonfinite) inflection that cannot be carried by a main verb already carrying passive or perfect inflection (cf. Drijkoningen 1989, Ouhalla 1991 for analysis).[14]

7. *Partial underparsing*

In sections 2-5 we have argued that underparsing can be responsible for the absence of certain constructions in a language. A similar position is taken in Legendre et al. 1995. The way in which the idea is developed there is different, however. Legendre et al. argue that the input of GEN consists of a target semantics and a numeration, comparable to what is usually assumed. However, the optimal candidate need not have the target semantics, since the `sameness of semantics' demand on candidate sets (see section 2) is abandoned. It is replaced by a violable (faithfulness) constraint that has the effect that the semantics of a candidate must be as close as possible to the intended semantics.

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[14] A reviewer poses the question of why DO is never used in periphrastic constructions. The first thing to note in this respect is that, no matter what verb is used as auxiliary, Project must always be violated in active perfects and nonperfect passives. The properties of these constructions differ from those of the participle, so they can only be derived at the cost of a Project violation. Inserting DO therefore makes no difference. The fact that there is no free alternation between the relevant auxiliaries and DO suggests that DO has the wrong feature specification to function as auxiliary in a participial construction. This would follow if it is specified as [+Θ_{ext}, -perf] (as just argued in the main text, an auxiliary with such a specification will never occur in a periphrastic passive or perfect, since it always invokes fatal violations).

Absolute ungrammaticality, as in the case of multiple questions in Irish (see section 3), then is explained as follows. There are constraints that are violated in the candidates that fully realize the input of a multiple question, but not in candidates in which only one WH is realized. Consequently, if Parse-WH (the relevant faithfulness constraint here) is ranked below these constraints, the optimal candidate for a multiple question is actually a simplex question.

If the definition of candidate set argued for above is adopted, this line of argumentation is impossible. If one or more of the WHs in the input are not realized, the candidate will not have the semantics of a multiple question. Therefore, it cannot be in the candidate set for multiple questions either. Only a candidate with no semantics, the null parse, competes with candidates with a particular semantics.

The difference between these approaches lies in the interpretation of constraints like Parse-WH. We interpret it such that some particular, morphologically identifiable, element in the numeration must occur in the output. Legendre et al. interpret it as a constraint that requires faithfulness to the target semantics, which includes the semantics of WH-phrases. Parse-WH then is an essentially semantic constraint, which is evaluated in a hierarchy containing syntactic constraints such as *Adjoin ("do not adjoin").

This is a possible approach, of course, but one which we think is not very attractive for conceptual reasons. It has the consequence that the autonomy of syntax must be relinquished, since syntactic and semantic constraints are evaluated on a par. Another problem concerns the determination of what the optimal candidate is. Considering multiple questions again, there seem to be various options.

First, it is conceivable that all WHs occur in the structure, but that only one is interpreted as such. Obviously, this is not what one would wish, since the absence of structures with more than one WH in a language like Irish would remain unexplained.[15]

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[15] Note that WHs that are not interpreted as such cannot violate syntactic constraints on WH-positioning.

Second, it might be that not interpreting a WH implies that it cannot be inserted in the structure. This would predict, however, that a sentence like *who destroyed* would be the optimal candidate for an input that expresses "who destroyed what". However, it is not the case that obligatory argument positions in questions need not be realized in Irish.

Third, the underparsed WH might be realized as another element, for instance as an indefinite quantifier. This option agrees with the facts, since sentences like *who destroyed something* can very well be grammatical in languages that lack multiple questions. The consequence is that one must now assume that if a feature is removed from a WH-word another word results, not only semantically but also phonologically. However, there is no plausible phonological relation between the Irish counterparts of *something* and *what* (Cathal Doherty, p.c.). Alternatively, if *something* is not related at all to the WH-word it stands in for, the condition on equal numerations for candidates must be relinquished, since then *who saw what* and *who saw something* with underparsed *what* have different numerations. Giving up this condition probably leads to new problems, however (see footnote 3).

Of course, partial underparsing as such is not disallowed. And in some cases, the resulting candidate *will* compete with fully parsed ones, namely if the semantics is not affected by omitting lexical material. This may be the correct analysis for, for instance, pro drop in languages like Italian (cf. Samek-Lodovici 1996).

If the semantics does change, the resulting structure will end up in a different candidate set. In that candidate set, it can in principle be optimal. As a consequence, it is possible that the numeration of an optimal candidate contains a number of superfluous elements that remain unparsed. This has no empirical consequences, however. Let a structure *acb* be the optimal candidate that expresses semantics S and that is projected from a numeration containing the elements a, b and c. Obviously, the same semantics can be expressed by projecting from a numeration containing the elements a, b, c and d and not parsing d. Since the numeration is different we are in a different candidate set now, but the optimal candidate will again be *acb*. So, a distinction can be made between the minimal numeration of a sentence and irrelevant extensions of this numeration.

8. *The Noninteraction of Parse Constraints*

An issue that was introduced in section 3 and that still needs to be addressed concerns the interaction of parse constraints with other parse constraints. Suppose that there are two parse constraints, Parse-F and Parse-G. Suppose, furthermore that there is some other constraint X that dominates Parse-F and which is violated by candidates containing the feature F, with the effect that the null parse wins (see (3), repeated here as (31)).

(31)

Input with feature F	Constraint X	Parse-F
Candidate C	*!	
+ 0		*

However, if Parse-G dominates constraint X, it is predicted that inputs containing both features F and G will be structurally realized by some candidate C':

(32)

Input with features F and G	Parse-G	Constraint X	Parse-F
+ Candidate C'		*	
0	*!		*

So, interaction of parse constraints leads to situations in which inputs containing a particular feature are realized only if they also contain some particular other feature.

It is unclear to us to which extent situations of this type exist in syntax, but if we consider the parse constraints adopted in this paper, some undesirable predictions seem to be made. For instance, languages could exist in which multiple questions do not exist, except in passive sentences (namely languages with a ranking Parse-Passive >> Op-Spec >> Parse-

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WH). Similarly, there could be languages that do not have passives, except in questions. We presume that such languages do not exist. In that case, parse constraints must not interact. In the remainder of this section, we will sketch an organization of grammar from which this follows. We will conclude with some speculations on the special status of parse constraints in the grammar.

In optimality theory, a grammar is a total ranking of universal constraints. The usual view of selection of the optimal candidate is that there is a single procedure of evaluation, in which all constraints are considered.[16] We propose that this is true, except for parse constraints. Per evaluation procedure only one parse constraint is included in the ranking. The total process of evaluation then consists of a series of evaluations each involving one parse constraint. The output of one such evaluation is the input for the next, with the effect that if the null parse is optimal in one evaluation, it will also be the optimal output of the total procedure. Hence, the cases of absolute ungrammaticality discussed in this paper are unaffected by the presence of features that are subject to other parse constraints.

Let us illustrate this organization of grammar. Consider our abstract example in tableaux (31) and (32) above. Suppose that the language has the following ranking of constraints:

(33)   ... >> Parse-G >> ... >> Constraint X >> ... >> Parse F >> ...

Since there are two parse constraints in (33), the evaluation procedure will consist of two cycles, in which the candidates are evaluated against the following two rankings respectively.

(34)   a.   ... >> Parse-G >> ... >> Constraint X >> ...
        b.   ... >> Constraint X >> ... >> Parse-F >> ...

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[16] That is, there is a single procedure of evaluation per grammatical component (phonology, syntax, etc.).

Although it does not matter which of the parse constraints is taken into consideration first, let us for the sake of concreteness assume that it is Parse-G. In that case, the candidate that comes out as optimal in the first evaluation cycle is some candidate C:

(35)

Input with features F and G	...	Parse-G	...	Constraint X	...
+ Candidate C				*	
0		*!			

This entails that the input for the next evaluation cycle is the set of features and lexical items realized by candidate C (including a specified semantics). This input is fed once more into GEN and the resulting candidates are now evaluated against the ranking in (34b), with the result that the null parse comes out as optimal:

(36)

Input with features F and G	...	Constraint X	...	Parse-F	...
Candidate C		*!			
+ 0				*	

The result of the overall evaluation procedure, then, is the null parse. Note that the same result is obtained if the order of the evaluation cycles is reversed. In that case, the first cycle would be as in (36). The optimal candidate in this cycle has no features (it is the null parse). The consequence is that the input for the next cycle has no features either, so that only the null parse will be considered. The subsequent evaluation is trivial:

(37)

Input without features	...	Parse-G	...	Constraint X	...
+ 0					

In sum, if parse constraints are evaluated on separate cycles, they will not interact, with the consequence that if it is optimal in a language not to parse some feature, this does not depend on the presence of other features.

Let us conclude with some speculations on why parse constraints are special: why are they evaluated differently from other constraints? What sets parse constraints apart from other constraints is that they alone relate to specific elements from the lexicon. Parse constraints alone check whether elements in the input appear in the syntactic structure. For every constraint it is possible to check for violations by considering the candidate as such; only parse constraints require that the input for GEN is considered as well.

So, in order to evaluate parse constraints, one must start out from the input and then consider whether the relevant elements from the input are realized in the various candidates. One can do so in two ways: by considering the realization of the entire input at once, or by considering the realization of one element in the input at a time. If the latter option is correct, the fact that parse constraints are evaluated in cycles follows. For each morphological element the corresponding parse constraint is relevant but the other ones are not.

The question then is which factors favour the second mode of evaluation (checking of violation of parse constraints per feature) over the first one (checking of violation of parse constraints for the entire input at once). Perhaps the difference between the two can be characterized as follows: in the first mode of evaluation a complicated task is performed once, whereas in the second one a simple task is performed a number of times. (Of course, the total number of comparisons between features in the input and the various candidates is the same in both cases). If in general multiple performance of a simple task is preferred over

single performance of a more complicated task, the proposed evaluation procedure for parse constraints is indeed preferred.[17]

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[17] There might be a relation to the work of Sternberg 1966, 1975. Sternberg argues that if subjects are asked to compare a test item with a set of elements stored in short-term memory, they do so in a serial manner (per element in short-term memory), rather than in a parallel one (for all elements in short-term memory at once). Although the similarity with the situation described in the main text is clear, it is not obvious whether Sternberg's conclusion carry over directly.

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