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Default Case in OT Syntax

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Abstract
Default case appears when a DP cannot get case through normal syntactic mechanisms (Schütze 2001). In an OT system, default case is best analyzed as an example of emergence of the unmarked. When case cannot be assigned, the least marked case is used. A constraint system is developed that includes markedness constraints for assigning structural case and faithfulness constraints for assigning nonstructural case (in partial agreement with Woolford 2001a). Default case is controlled by the ranking of constraints that penalize the appearance of certain cases – the lowest ranked of such constraints correlates with the default case of the language. This is an argument against Woolford's (2001a) proposed universal ranking of these constraints. The constraint system developed here is used to analyze bare pronoun answers to questions (e.g. "Who is going?", answer: "Me.") in English (where default case is used) and German (where default case is not used).

1. Introduction

Case systems of languages show substantial diversity.[1] One way case systems differ from one another is in the use of *default* case. Default case seems to appear when a DP cannot get case through normal means. Such DPs have case, but this case is not necessarily related to the semantics or syntax of the DP, i.e. the case does not denote a grammatical relation or a theta role, etc. For example, in the sentence '*Me, I like beans'*, *me* has accusative case, which is the default case of English (Schütze 2001). There is language variation in terms of which case is the default of the language and in terms of which constructions utilize default case. This paper investigates default case systems in search of some basic properties that constrain the cross-linguistic variation.

Because a general goal of this paper is cross-linguistic analysis, I believe theoretical advantages can be gained by using a system based on competition, namely Optimality Theory

[1] Unless stated otherwise, *case* in this paper will refer to both abstract case and surface morphological case marking.

(OT, Prince and Smolensky 1993, McCarthy 2002). When we use violable constraints, these constraints can be ranked in various ways to derive various case systems. If a pattern cannot be derived from any ranking of the given constraints, that pattern is predicted not to exist in any language.

The specific goals of this paper are thus to introduce constraints relevant to default case, use the constraints to explain some basic differences between German and English in terms of default case, and to discuss the languages that are and aren't predicted to exist with the given constraint set. I will make use of the types of case proposed by Woolford (2006, structural, lexical, and inherent). I will amend this classification of case by adding another type – default case – which is not structural, lexical, or inherent. Default case is an example of the emergence of the unmarked. Following Woolford (2001a), constraints exist that rule out certain cases, i.e. *ACCUSATIVE says that accusative case is forbidden. My claim is that default case correlates with which ever of these constraints is ranked the lowest in a given language. For example, if *ACC is dominated by all other such constraints (e.g. *NOMINATIVE, *DATIVE, etc.), accusative is the default case for that language. This claim goes against the proposed universal ranking of *DAT » *ACC » *NOM (Woolford 2001a).

This paper will proceed as follows. I will first present my assumptions about OT syntax in §2. I will then outline different types of case and how to model them in §3. This section will present relevant data from German and English and relevant OT constraints. In §4 default case in English is analyzed and a challenge presented by English infinitives is addressed. German is discussed in §5. Implications for a factorial typology are in §6 and conclusions follow in §7.

2. Assumptions about OT Syntax

As McCarthy (2002) points out, there are many issues that are taken for granted in OT

phonology but can be controversial in OT syntax. Of particular interest here are three questions he poses (p 193): What is the input? What are the candidates? and What are the faithfulness constraints like? McCarthy's answer to the first two questions is "just about anything" with a caveat: the input must be able to "interface sensibly" with GEN and with faithfulness constraints, and the candidates must be able to "interface sensibly" with faithfulness and markedness constraints. Answers to the third question vary, but of course the nature of faithfulness constraints is dependent on the nature of the input and the output candidates. Thus, the answers to these three questions are dependent on one another. In this section I will make my assumptions about OT syntax explicit with respect to the input, the output, and GEN.

Regarding the input, I will follow Legendre (2001:20) who says that there is some agreement among OT syntacticians that the input must (at least) contain "predicate-argument structure, lexical items, information and illocutionary features, level of argument prominence, as well as familiar functional features (tense, aspect, and so on)..." I believe this viewpoint is summarized by Lyngfelt (2000), Hendriks and De Hoop (2001), and Wilson (2001) who say that formal semantic structure is the input for OT syntax. It is important to note that this approach does not utilize syntactic structure in the input.

The output does, of course, contain syntactic structure. Because such structure is not present in the input, it must be supplied by GEN, which is the universal candidate generator. There can be no language specific requirements on GEN, nor is GEN the "appropriate repository for language universals" (McCarthy 2002: 194). There is thus a general desire to keep GEN as simple as possible. For the purposes of this paper, I assume that GEN creates candidates that conform to the X' schema. I also follow Woolford (2001a:511), who says that any candidate violating the general principles of Case theory "will be eliminated from the candidate set before

the violable constraints apply." One effect of this stipulation is that GEN can only create candidates wherein all DPs have case. In accord with "freedom of analysis" (McCarthy 2002: 8), GEN supplies an infinite set of candidates for any given input, which is then evaluated by the constraint ranking (as illustrated in further detail below).[2]

If the input contains formal semantic structure and the output contains formal syntactic structure, it is clear the faithfulness constraints must be able to refer to the semantic structure of string 1 (the input) and compare it to the syntactic structure of string 2 (the output candidate). This means that OT faithfulness constraints, in addition to demanding similarity between string 1 and string 2, may also have to specify exactly what it means to be similar. For example, Woolford's (2001a) FAITH-LEX constraints (see (3) below) say that an inherent case-marking feature (in the semantic input) must be checked (in the syntactic output). Thus, the input and the output are the "same" if a DP in the output appears with the surface case marking that correlates with a feature present in the input. On the other hand, some properties, like lexical items, are consistent in both semantic and syntactic form. For example, it might be desirable to have a faithfulness constraint MAX-LEX, which says that any lexical item present in the input must also be present in the output. Such a constraint does not need to refer to semantic or syntactic structure, meaning that comparison for similarity between input and output is straightforward.

Thus, faithfulness constraints can only compare features that are present in the input to features that are present in the output. Because input and output do not contain the same type of structure, faithfulness constraints in OT syntax may have to be explicit about what they are looking at in both strings (input and output candidate). This differs from faithfulness constraints

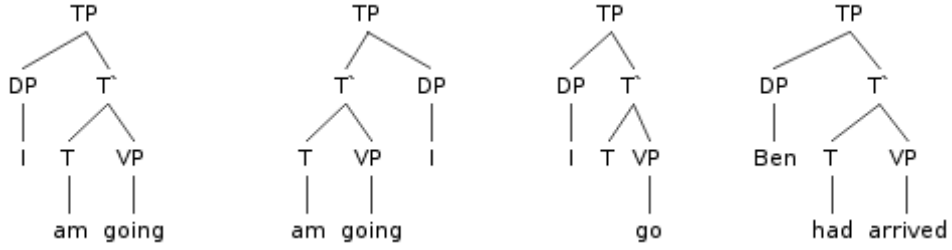
[2] This means that the candidates created by GEN are created without reference to the input. According to freedom of analysis, GEN actually creates the same infinite set of candidates for any input in any language. Most of these candidates will, of course, be harmonically bounded such that they would not win no matter what the constraint ranking (see example (1) below).

in OT phonology, where input and output have the same type of structure (though not always – it is generally assumed that certain prosodic information (like syllable boundaries) is not present in the input though it is in the output). OT phonology faithfulness constraints usually say that an output should be identical to the input in such and such a way. OT syntax faithfulness constraints do the same thing, but often they must specify what it means for the output to be identical to the input due to the different types of structure present in input and output.

I will illustrate these claims with a simple example. Consider the input *1s-AGENT go-PRES.PROG*.[3] This input contains the lexical entry *go* and a reference to a first person singular pronoun. Each of these entries is also supplied with some semantic information, denoted by small capitals (which will be the notation used throughout this paper). This extra information tells us that the first person singular pronoun should bear the theta-role of agent and that *go* should be inflected for progressive aspect and present tense. There is no other information expressed in the input.

The job of GEN is to create an infinite set of candidates with syntactic structure. Some potential candidates are shown below.

(1) a. *I am going* b. *am going I* c. *I go* d. *Ben had arrived*



The winning candidate for this input in English would, of course, be (a). Various constraints would rule out candidates (b-d). Candidate (b) violates constraints on word order in English.

[3] Though I make the claim that the input contains formal semantic structure, for ease of exposition, I will use the notation presented in "*1s-AGENT go-PRES.PROG*", where lexical items are in lower case italics and all other information (theta marking, tense, etc.) is in small capital italics.

Candidate (c) is unfaithful to the input in that the verb does not agree with the tense and aspect specifications. Candidate (d) is unfaithful to both the lexical and semantic specifications of the input. It should be noted the candidate (b) could be a winner in another language with a different constraint ranking (assuming different but semantically equivalent lexical items) and candidate (c) could be the winner in a language with no tense or aspect morphology. Candidate (d) would be harmonically bounded in any language, which means it would never be the optimal candidate for this input no matter what the constraint ranking of the language is. This candidate was included to illustrate the point that GEN is blind to the input, i.e. it does not only generate relevant candidates. It is up to the constraint ranking, and hence the EVAL function to decide which candidate wins. The "irrelevant" candidates, like (d), will be harmonically bounded and will never win.

Another important point illustrated by (1) is the difference between faithfulness and markedness constraints. Candidate (b) is fully faithful to the input; it does not deviate semantically or lexically. It loses because of high-ranking markedness constraints that control word order in English. Markedness constraints evaluate only the output candidate and, like GEN, are blind to the input. In fact, a candidate like (d) would actually fare better than (b) in terms of markedness because it utilizes correct English word order. On the other hand, candidates (c-d) are ruled out by faithfulness constraints. Faithfulness constraints compare the output candidate to the input and demand similarity.

3. Case in OT Syntax

It is clear that case is a source of language variation. Languages are often classified as to whether they are nominative/accusative or ergative/absolutive, but neither of these is a perfectly homogenous group. There is a general trend in the literature to handle case by making language-

specific claims about the assignment of case. For example, with respect to default case, Hwang (1997:86) says, "Default case is checked and licensed by T with the feature [-tense]... nominative case is checked and licensed by T with the feature [+tense]," which is only applicable to English and any other similar languages (as recognized by Hwang). On the other hand, Roehrs (2002:224) says, "Nominative case is the default option in PF when a DP has not had a case licensed," which is not applicable to English.

In an OT system, the claims made above by Hwang and Roehrs could be encoded into violable constraints, and because these constraints would be freely rerankable in any language, there is no problem with the fact that not all languages seem to be affected by such constraints. Furthermore, candidates that satisfy any of the relevant constraints would compete in all languages, with the winner chosen by the constraint ranking. This approach will shed some light on the theoretical nature of case assignment that would not be possible in a system that only focused on the language-specific nature of case without taking into account cross-linguistic generalizations. In an OT analysis, it is impossible to ignore cross-linguistic generalizations.

3.1 Default Case

In many languages, we find a pattern of one particular case appearing in constructions where typical conditions for case assignment are not met. For example, in "Mad Magazine expressions" in English like '*What? Him eat carrots? Never!*' we see accusative case with *him*, even though this pronoun is acting as the subject and as such would normally receive nominative case (cf. *he eats carrots*). The same pattern can be found in English in a variety of constructions (see Schütze 2001 for a summary). What all of the constructions have in common is that accusative case is used no matter what case is normally assigned to such structural positions or theta-roles. This evidence suggests that accusative is the *default case* of English.

According to Schütze (2001:1-2), "The default case forms of a language are those that are used to spell out nominal expressions (e.g. DPs) that are not associated with any case feature assigned or otherwise determined by syntactic mechanisms." He also notes, "We find a set of elements behaving alike, where the members of that set have nothing in common other than the fact that they do *not* belong to any natural class." Default case is thus diagnosed as one case that consistently covers an unnatural class of theta roles or structural positions. This contrasts with what I will call *assigned case*, which is any case normally assigned to a DP that expresses particular theta roles or appears in certain structural positions. In *he eats carrots*, *he* has assigned case (nominative). In *him eat carrots?*, *him* has default case (accusative).

3.1.1 Data from English and German

Default case appears in a wide variety of contexts in English. This is not so in all languages. English uses its default accusative case when pronouns are used as answers to questions, as shown in table 1, while German does not. In table 1, an example is provided where the pronoun represents the subject of an intransitive (S), the subject of a transitive (A), and the object of a transitive (O, following Dixon 1979). We see that English uses accusative case for each of these positions and that German has "case-matching" following a nominative/accusative case system. Thus, we see that languages may or may not utilize default case for bare pronoun answers. Given that these pronouns are the only overt element of the utterance, it is almost surprising that default case is not used in these situations in German. One may wonder how the German pronouns are getting case. The fact that there is language variation in case even in simple one word responses will have important implications for the theory presented here (see §4-5).

Table 1: Bare pronoun (DP) answers to questions[4]
all bare pronoun answers use a 1st person singular pronoun

	English	German
	Who is going?	Wer geht? *who-NOM go-3S*
S	**Me-ACC/*I-NOM.**	**Ich-NOM/*Mich-ACC.**
	Who hit John?	Wer hat Hans geschlagen? *who-NOM has Hans hit-INF*
A	**Me/*I.**	**Ich/*Mich.**
	Who did John hit?	Wen hat Hans geschlagen? *who-ACC has Hans hit-INF*
O	**Me/*I.**	**Mich/*Ich.**

3.1.2 Default Case in OT Syntax

Schütze (2001) says that default case results when case cannot be assigned by ordinary "syntactic mechanisms". In OT, the ordinary mechanisms are of course constraints, and more importantly, the constraint ranking. Assigned case results when constraints effectively allocate case based on structural positions (structural case), theta roles (lexical case), or inherent lexical specifications (inherent case, see Woolford 2006 for an explanation of these different types of cases, and §3.2 below). Default case results when these constraints fail to determine a winning case. This suggests that default case is an example of the emergence of the unmarked and that this type of case is thus determined by markedness constraints that rule out certain cases (i.e *DATIVE, Woolford 2001a).

The data presented in table 1 is thus somewhat unexpected given Woolford's (2001a) proposed universal markedness hierarchy with respect to case. Using the fixed ranking of OT constraints (which are defined in more detail below in §3.2), *DATIVE » *ACCUSATIVE » *NOMINATIVE, nominative is the least marked case and should thus appear as default case.[5] In

[4] Thanks to a native speaker, Rahul Bhatnagar, for help with the German data.
[5] In fact, Woolford (2001a:footnote 10) proposes that *NOM does not even exist. If the hierarchy really were universal, this would be the correct approach because no language would ever penalize nominative case. The

this paper I argue against the existence of a universal markedness hierarchy with respect to case, based on the evidence presented in table 1. Woolford (2001a) admits in a footnote that accusative default case in English is problematic for this constraint hierarchy and thus assumes that other constraints control the use of an accusative default in English. I don't think these other undefined constraints are necessary or that a fixed universal hierarchy with respect to *CASE constraints is necessary.[6] I propose that in any given language the default case will correlate with the lowest-ranked *CASE constraint, i.e. if *NOM is ranked lower than all other *CASE constraints, nominative is the default case of that language.[7]

In this way, I believe that Schütze's claims fit nicely with an OT framework. When a constraint that is responsible for assigning case (via ordinary syntactic mechanisms) is dominated by the *CASE constraints, case cannot be assigned by that constraint. In the winning candidate, any DP occurring in the relevant position will appear with the default – the least marked – case. In the next section I turn my attention to these other constraints that assign case.

3.2 Types of Case and Relevant Constraints

According to standard case theory, there are two types of case, commonly called

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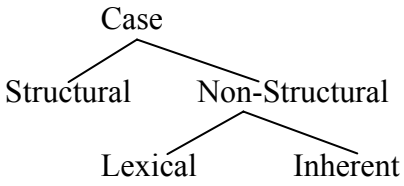
analysis presented here make crucial use of *NOM and so I believe it is a member of CON (the universal constraint set).

[6] The problem cannot be remedied by appealing to the impoverished case system of English. Schütze (2001) also cites Norwegian, Danish, and Irish as having accusative default case, while German, Spanish, and a handful of other languages have nominative default case. I have concluded that Yucatec Maya (an ergative Mayan language) has dative default case (based on the fact that dative is always used with bare pronoun answers and further discussion with a native speaker, Santiago Domínguez). It is clear that there is language variation with regard to default case.

[7] It should be noted that Woolford (2001b) develops the universal case markedness constraint hierarchy to explain Burzio's Generalization (Burzio 1986:178). She looks at data from Hindi, German, Icelandic, and Faroese, shows that the universal hierarchy makes the correct predictions with respect to case in these languages, and argues that nominative objects appear when the subject has another case because nominative is the least marked case. While I argue against the universality of the hierarchy I do not argue against this ranking of the *CASE constraints for these four languages. Instead, I propose that this is the ranking of these constraints for Hindi, German, Icelandic, and Faroese because all of these languages utilize nominative as the default case (Schütze 2001 (German and Icelandic), Wunderlich 2000 (Hindi), Schütze and Wexler 1996 (Faroese)). There is thus not an immediate conflict between her analysis and my rejection of the universal hierarchy. The prediction is made that if a language upholds Burzio's Generalization, this language will have a nominative default case. If a language is considered an exception to Burzio's Generalization, this language likely utilizes a default case other than nominative.

structural and *non-structural*. Woolford (2006) argues that there is a further division in non-structural case, shown below in (2). We thus have three different types of case: structural case is assigned based on structural position (e.g. the specifier of TP receives nominative case), lexical case is assigned idiosyncratically by particular lexical entries (e.g. a certain verb requires a dative subject), and inherent case is assigned with respect to theta-roles (e.g. the agent receives nominative case).

(2) types of case (Woolford 2006):



It seems that default case is different from each of these three types of case. Because those DPs who receive it form an unnatural class, it cannot be assigned based on syntactic structure or theta-roles. Furthermore, it is too consistent to be the unpredictable lexical case. We are thus dealing with a fourth type of case and a third type of subdivision in the case schema. Given an OT framework, it is worthwhile to look for explanations as to the differences between these types of case in the constraints that assign them.

Woolford (2001a) proposes that lexical case is assigned via a faithfulness constraint, shown in (3). If this is true, it would be ideal for inherent case, the other type of non-structural case, to also be assigned via a faithfulness constraint, developed in (4).

(3) FAITH-LEX: A lexically specified inherent case marking feature must be checked. (Woolford 2001a)

(4) FAITH-θ: A DP bearing the theta-role α has case β.

It should be noted that the above constraints really stand in for constraint families. For example, one constraint in the F-θ family might be F-AGENT, as defined in (5). This constraint

may be ranked differently from other constraints in the F-θ family. Thus a language may prioritize which theta-roles are realized in which way.

(5) example F-θ constraint:
F-AGENT→NOM: A DP bearing the theta-role of agent has nominative case.

While non-structural case is assigned by faithfulness constraints, I propose that structural case is assigned by markedness constraints. Again, the constraint defined in (6) stands for a constraint family. One constraint in this family, for example, may correlate with Hwang's (1997) statement quoted at the beginning of §3: if a DP α is the specifier of a TP that is [+tense], then α must have nominative case. The STRUCCASE constraints require no assumptions about the input. It does not matter what role a DP plays in the semantics of the input: a STRUCCASE constraint looks for DPs in the specified position, and violation-marks are assigned if a DP is in the appropriate syntactic position and does not bear the specified case.

(6) STRUCCASE: If a DP α is in the appropriate syntactic position to receive structural case β, then α must have case β.

(7) example STRUCCASE constraint:
SC-SPECTP→NOM: a DP in the spec of TP has nominative case

Thus far I have claimed that non-structural case is accounted for by faithfulness and structural by markedness. There is no other constraint type that can account for default case, but this is expected because the very nature of default case is that it is not *assigned*, i.e. we should not expect a constraint that specifically says, for example, "such and such DPs receive default case, which is accusative". A particular phenomenon associated with OT is parallel to this idea of default case not being directly controlled by markedness or faithfulness. In OT, the appearance of a common form that is otherwise inexplicable is often connected with "the emergence of the unmarked". When higher ranked constraints cannot pick a winning candidate, the candidate that wins is the one that is the least marked. I propose the default case of a

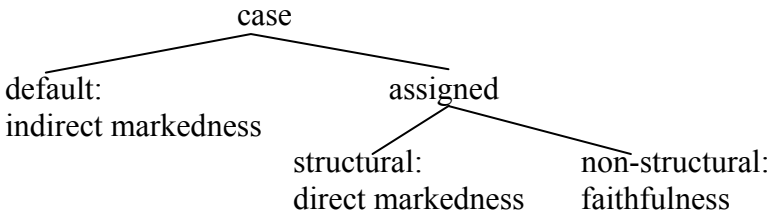
language is the one that is the least marked, as determined by the ranking of multiple *CASE constraints, defined in (8). Specifically, when F-LEX, F-θ, STRUCCASE, and *CASE are ranked in such a way that the former three cannot select a winning candidate, the decision must be made by the *CASE constraints. The winner will thus be the one that violates the lowest-ranked *CASE, and so the unmarked case will emerge.

(8) *CASE: case α is forbidden. (Woolford 2001a)

(9) example *CASE constraint:
*NOM: nominative case is forbidden

Given these constraints, we can reevaluate the schema in (2) to include default case and to define the different case types by what kind of constraint accounts for them:

(10) different types of case as controlled by different types of constraints (in partial agreement with Woolford 2001a, 2006):



4. Analysis of English

Now that we have constraints for assigning case and for determining default case, we can proceed to an analysis of the English and German data presented in table 1 in §3.1.1. We need to account for the fact that bare pronoun answers receive assigned case in German and default case in English and for the fact that this default case is accusative (and not nominative). The analysis of English presented in this section will illustrate some of the basic claims of this paper. We will see how structural case is assigned by markedness constraints and how default case emerges when the *CASE constraints outrank other relevant markedness constraints. I will also extend the analysis to account for the absence of DP subjects in infinitive clauses (and their presence in

Portuguese).

4.1 Bare Pronoun Answers

In this section, we will look at bare pronoun answers in English. For the time being, I will assume that such answers result from a simple input specifying person and number of pronoun and its theta-role (an assumption that will be adequate for now, but will change in §5, when evidence against it is presented). We see in tableau (11) how an input specifying a first person singular agent maps onto the accusative pronoun *me*. The winning candidate violates both the F-θ constraint F- AGENT and *ACC, meaning both of these constraints must be dominated by *NOM, as shown in (12). Because there is no syntactic structure, SC-SPECTP is vacuously satisfied.

(11) English, bare pronoun answer (to the question *Who is going?*)

/1s-AGENT/	SC-SPECTP	*NOM	F-AGENT	*ACC
I.		*		
☞ Me.			*	*

(12) *NOM » F-AGENT, *ACC

This ranking is compatible with the bare pronoun answer *me* when it correlates with the object of a transitive verb. In this case, the output would not incur a violation of any F-θ constraint (i.e. F-THEME), only of *ACC.

We must also be able to account for the appearance of assigned case in English. It is, of course, possible to answer the question "Who is going?" with a full sentence, such as "I am going." I will assume, for now, that the answers "me" and "I am going" result from different inputs, such that the later input contains the verb. In tableau (13), we see the winning full sentence answer with the subject in nominative case. For space considerations, the structure of these candidates is not shown, but it is the same structure given above for (1a). The losing candidate fatally violates the STRUCCASE constraint SC-SPECTP→NOM, which derives the

ranking in (14).

(13) English, full sentence answer (to the question *Who is going*?)

/1s-AGENT go-PRES.PROG/	SC-SPECTP	*NOM	F-AGENT	*ACC
☞ I am going.		*		
Me am going.	*		*	*

(14) SC-SPECTP » *NOM » F- AGENT, *ACC

We now have a ranking that accounts for assigned case in English full sentence answers and default case in English bare pronoun answers. It is worthwhile to reflect on what this ranking tells us about English, given Schütze's (2001) definition of default case as employed here. In full sentence answers, subjects have structural case as assigned by SC-SPECTP, which is a normal "syntactic mechanism". This means subjects in full sentence answers have assigned case due to the fact that SC-SPECTP dominates the *CASE constraints. To be exact, default case cannot surface (i.e. the unmarked case does not emerge) in such syntactic positions because it is more important for subjects in such sentences to have nominative case. In bare pronoun answers, default case is utilized because SC-SPECTP cannot assign case (i.e. it cannot pick a winner among the possible candidates) and F-AGENT is outranked by a *CASE constraint, namely *NOM. Because normal syntactic mechanisms cannot assign case, the unmarked case is deemed optimal by the grammar.

There is a generalization that can be made at this point about default and assigned case in an OT grammar. If a constraint of the F-θ, F-LEX, or STRUCCASE families dominates all *CASE constraints, this constraint can influence assigned case (in contexts where the constraint is applicable). Let's call such constraints *case-assigners* in a given grammar. If a DP occurs in a particular context such that no case-assigners are applicable, that DP will have default case (as determined by the ranking of the *CASE constraints). In this manner, the grammar of a language determines in what constructions DPs receive default case and in what constructions they receive

assigned case. The more case-assigners the grammar has, the less often default case will appear, as will be the case with German (see §5).

4.2 Infinitives

There is a perhaps undesirable implication that results from the previous analysis. If default case is a viable option for any DP that does not receive case from the case-assigners, then every DP can get case – either assigned or default case. This means that lack of case cannot explain why DPs are prohibited in certain positions. Consider infinitive clauses, as shown in (15). Such clauses never have overt subjects in English. A standard way to explain the absence of subjects in this position is to say that a nonfinite TP cannot license case, and since a DP cannot appear without case, a DP cannot appear in this position. This explanation will not work with the system I have proposed because the constraint ranking devised so far predicts an accusative subject to be grammatical. More generally, default case is always an option for a DP, meaning there no reason any DP cannot get (default) case.

(15) English infinitives:
I tried PRO to leave.
**I tried me to leave.*

Before working on a solution to this predicament, I would like to point out that the problem is present in any analysis that utilizes default case and is not just a consequence of an OT analysis. If the claim is made that default case results when normal syntactic mechanisms for assigning case fail, then default case should be possible with the subject of an infinitive, just as it's possible with the subject of the nonfinite verb *eat* in *Him eat carrots?* The only way around this problem for a non-OT analysis is to list every environment in which default case can occur. Not only is such an approach unnecessarily stipulative, it is also against the nature of default case.

In an OT system, the solution lies in the constraints. It will be necessary for constraints to directly penalize the appearance of subjects in infinitive clauses. Thus, it will be the case that these DPs are not ruled out for not having case but are ruled out for other reasons. Given that there is language variation in this matter, it is logical to expect this work to be done by violable constraints. As shown below, Portuguese allows overt subjects in infinitive clauses, and even uses agreement morphology on the verb. It should be noted that, because Portuguese is a pro-drop language, a subjectless infinitive is also grammatical. However, because infinitives do use agreement morphology and can appear with subjects, the claim is that the null subject of an infinitive is little pro (just like the null subject of a matrix clause) and not big PRO (Garcia 2005).

(16) Portuguese infinitives (Garcia 2005:53):
Será difícil [eles/*PRO aprovar*em* a proposta]
will be difficult [they/*PRO approve.infinitive+Agr the proposal]
"It will be difficult they to-approve-Agr the proposal (...for them to approve...)"

An analysis must be able to handle languages like English that completely disallow subjects with infinitives and languages like Portuguese that do (optionally) allow them. It will also be desirable for the analysis to account for the fact that a Portuguese-like language is exceedingly rare. One way to do this would be for there to be multiple constraints penalizing the appearance of overt subjects with infinitives. If there are many constraints disallowing them, it becomes less likely for a language to have a constraint ranking with all such constraints ranked low so that subjects could surface with infinitives as they do in Portuguese. Of course, we do not want to just name a bunch of constraints that do the same job. If multiple constraints disallow these subjects, these constraints should also be doing other work.

Due to the fact that some languages do not require overt subjects, it seems reasonable that there is a constraint that penalizes overt subjects in any context, as defined below:

(17) *OVERTSUBJ: no phonologically overt subjects are allowed

In addition to the general constraint *OVERTSUBJ, there should be contextual *OVSUB constraints that only penalize overt subjects in certain environments, such as nonfinite and/or non-matrix clauses. It is also likely that the properties of the null subject in a nonfinite clause make it undesirable as an overt subject. Chomsky and Lasnik (1995) claim that PRO is [+anaphor, +pronominal] (the only possible subject with these feature values). Reflexives and reciprocals are also [+anaph], while pronouns are [+pro]. Hence, r-expressions are the only possible subjects that are [-anaph, -pro]. It seems then, that languages might want to prohibit either [+anaph] or [+pro] overt subjects but are unlikely to want to prohibit either [-anaph] or [-pro] overt subjects. If there are two different *OVSUB constraints, one for [+anaph] and one for [+pro], both would penalize an overt subject in PRO's position.

(18) contextual *OVERTSUBJ constraints:
*OVSUB-[+anaphor]
*OVSUB-[+pronominal]
*OVSUB-embedded TP
*OVSUB-nonfinite TP

The constraints in (18) all penalize an overt subject in a nonfinite clause. However, they all also penalize other types of overt subjects (except *OVSUB-nonfinite TP). Thus, they are each responsible for ruling out a different set of overt subjects, and it is conceivable that these different sets correlate with use of null subjects in different languages. The potential effect of these constraints is illustrated in tableau (19). Here we see an input for the English sentence "I tried to leave". This input has two subjects, but only one is overt in the winning candidate. The subject of the infinitive is deleted, which incurs a violation of MAX-LEX (as defined in §2), but this is preferable to retaining an overt subject in an illegal position. The subject of the matrix tensed clause is not deleted because there is nothing motivating deletion, and gratuitous

violations of MAX-LEX are not allowed.

(19) infinitives in English

1s-AGENT try-PAST 1s-AGENT leave-INF	*OVSUB/context	MAX-LEX	*OVSUB
☞ I tried to leave		*	*
I tried me/I to leave	*!		**
tried to leave		**!	

(20) {*OVSUB/context} » MAX-LEX » *OVSUB

If any of the *OVSUB contextual constraints proposed above dominate MAX-LEX, the correct candidate wins. It is not necessary for all of them to dominate the faithfulness constraint, which is denoted by the curly braces around the contextual constraint in (20). Thus, in any language where one or more of the contextual *OVSUB constraints dominates MAX-LEX, this language will disallow subjects in infinitive clauses.

In Portuguese, there are two grammatical outputs – one with and one without an overt subject in the nonfinite clause. Each output is the winning candidate for a different input, where the inputs either do or do not specify the subject of the nonfinite clause. In tableau (21), where the subject of the infinitive is specified, we see that MAX-LEX outranks all of the *OVSUB constraints – both the general and the contextual constraints. In tableau (22), where the subject of the infinitive is left unspecified, we see that the losing candidate is harmonically bounded. There is no motivation for inserting a subject where it is not lexically provided.

(21) infinitives in Portuguese (subject of infinitive in the input)

1s-AGENT try-PAST 1s-AGENT leave-INF	MAX-LEX	*OVSUB/context	*OVSUB
☞ I tried I to leave		*	**
I tried to leave	*!		*

(22) infinitives in Portuguese (subject of the infinitive not in the input)[8]

1s-AGENT try-PAST leave-INF	DEP-LEX	*OVSUB/context	*OVSUB
☞ I tried to leave		*	
I tried I to leave	*(!)	**(!)	*(!)

[8] DEP-LEX penalizes insertion of lexical elements not present in the input.

(23) MAX-LEX » *OVSUB/context, *OVSUB

The difference between English and Portuguese thus has to do with the ranking of MAX-LEX and the *OVSUB constraints. It is crucial that, for English, only one of the proposed contextual *OVSUB constraints must dominate MAX-LEX, while for Portuguese, MAX-LEX must dominate all contextual OVSUB constraints. This system predicts a Portuguese-like language to be rare and an English-like language to be common, which is indeed the case.

4.3 Local Summary

This section has shown how to account for both assigned and default case. Case-assigners are those constraints (of the STRUCCASE, F-LEX, or F-θ families) that outrank all *CASE constraints. Only those DPs that occur in positions where no case-assigners are applicable will appear with default case.

This analysis makes the strong claim that any DP can get case. The fact that DPs cannot appear in certain positions is thus not a consequence of the inability to get case – it is a consequence of constraints that ban DPs in these positions. By using rankable violable constraints that penalized the appearance of certain DPs, we can account for a language like English where no DP subjects are allowed in infinitive clauses and a language like Portuguese, where such subjects are allowed.

5. Analysis of German

The German case system is a definite contrast to that of English. In this section we will look at how to account for case-matching bare pronoun answers and how to extend this analysis to sluicing, where there is also case-matching. The German data will require altering some of the assumptions made in the previous section. Specifically, I will show that all inputs in OT syntax must be able to be mapped onto complete sentences. When a statement, such as a bare pronoun

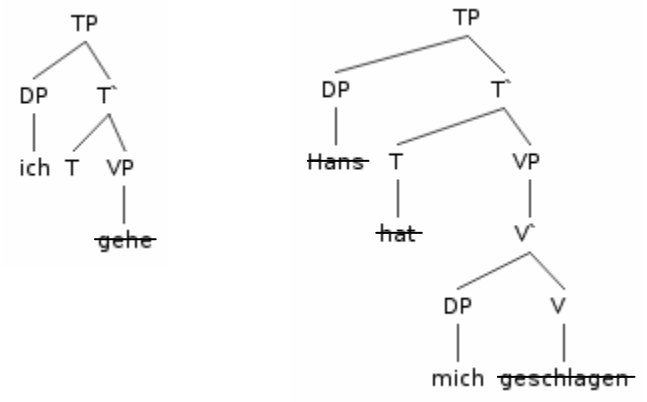
answers to a question, is not a complete sentence, this is because the input that created the statement contains a feature demanding the deletion of extraneous material.

5.1 Bare Pronoun Answers

In German, when the answer to a question correlates with the subject, the pronoun is in nominative case, but when the answer to a question correlates with the object, the pronoun is in accusative case. Thus, it is not the *CASE constraints that account for case in these constructions, but rather some case-assigner. It seems that the pronouns are displaying structural case, as subjects are in nominative and objects are in accusative. If this is so, there must be some syntactic structure to these bare pronoun answers so that they can get structural case. This would be possible if the rest of the sentence was elided, such that the verb and any other elements are not pronounced but their structure is left behind. In (24a-b) we see the structure that remains after the deletion of the VP (and the subject for (b)).

(24) elided structures for bare pronoun answers

a. *Ich (gehe).* b. *(Hans hat) mich (gelschlagen).*



If such structure is present in the output, its corresponding semantic structure must be present in the input. I propose that all inputs in OT syntax must contain enough information to be interpreted as full sentences, or enough information to be given a truth value. The bare pronoun answers and full sentence answer still result from different inputs and that difference is

in features that specify certain information should be elided. Hence the bare pronoun answer results from the same input as the full sentence answer except that the former contains a feature (i.e. [+elide]) that demands the deletion of certain overt elements.[9]

If this is so, then the English bare pronoun answers must also result from fully specified inputs with this [+elide] feature. The question then arises as to why the English pronouns are not able to get structural case. I believe it would be appropriate to make use of contextual case-assigning constraints that only work when lexical entries are not elided. As shown in (25) with an example, such constraints would able be able to assign case in clauses where no elision has occurred. It is thus the case that the positional case-assigning constraints are high-ranking in English, while the general case-assigning constraints are low ranking and cannot assign case in structures where elision has occurred, such as bare pronoun answers to questions (note that default case occurs in all elliptical structures in English (Schütze 2001)).

(25) STRUCCASE-NOELISION: If an NP α is in the appropriate syntactic position (in a structure with no elision) to receive structural case β, then α must have β case.

Given these new assumptions, the tableau from (11) is redone below, in order to illustrate the importance of these contextual case-assigners. The candidates do not show structure, but they have structure similar to that displayed in (24) where the structure of the full sentence exists though all lexical elements except the answer have been deleted. This tableau derives the ranking shown in (27), where we see that *NOM dominates the general SC-SPECTP constraint. Of course, English does utilize structural case in non-elided contexts. This is possible because the contextual SC-SPECTP-NOEL can be ranked separately from the general constraint. This

[9] For now I will assume that [+elide] calls for the deletion of old information. What is old information is determined by the discourse and putting the current analysis into the context of a discourse is beyond the scope of this paper. It should also be noted that having [+elide] in the input should not guarantee deletion – whether or not deletion occurs would be subject to the constraint ranking. A discussion of what constraints control deletion is also beyond the scope of this paper.

constraint should be high ranking in English and can thus assign structural case when no elision has occurred.

(26) English, bare pronoun answer (to the question *Who is going?*)

/1s-AGENT go-PRES.PROG [+elide]/	SC-SPECTP-NOEL	*NOM	SC-SPECTP	F-AGENT	*ACC
I.		*			
☞ Me.			*	*	*

(27) * NOM » SC-SPECTP, F-AGENT, *ACC

Assigned case occurs in German in bare pronoun answers, and so these pronouns must be able to get structural case even though the rest of the sentence has been elided. In the following tableaux, we see how the bare pronoun answers for German are derived. Again, structure is not shown in the tableau, but the structure for the candidates is the same as that shown in (24).

(28) German, bare pronoun answer (to the question *Who is going?/Wer geht?*)

/1s-AGENT gehen-PRES.PROG [+elide VP]/	SC-SPECTP	*ACC	*NOM
☞ Ich.			*
Mich.	*	*	

(29) {SC-SPECTP or *ACC} » *NOM

(30) German, bare pronoun answer (to the question *Who did John hit?/Wen hat Hans geschlagen?*)[10]

/Hans schlagen-PAST 1s-THEME [+elide subj, V]/	SC-COMPVP	*NOM	*ACC
Ich.	*	*	
☞ Mich.			*

(31) {SC-COMPVP or *NOM} » *ACC

In (29) and (30), the curly braces denote optionality – one of the constraints within them must dominate the other constraint. This means that no explicit rankings are derived in the above tableaux, but they do show us the importance of the STRUCCASE constraints – due to the transivity of dominance at least one of these STRUCCASE constraints must dominate both *CASE constraints (*ACC and *NOM). In other words, structural case occurs with bare pronoun answers

[10] The constraint SC-COMPVP demands that the complement of the VP have accusative case.

in German because of the high-ranking general STRUCCASE constraints.

5.2 Sluicing

Further evidence for the German analysis presented so far comes from sentences where a specific type of ellipsis has occurred. Sluicing happens when an IP is elided and all that remains is the C (Merchant 2001). This is illustrated in (32), where we see the only remaining part of the embedded clause is the head of the CP. In (32a) the word for 'who' is inflected for dative case. This is because the verb *schmeicheln* 'flatter' triggers lexical dative case in its objects (i.e. the case of the object is assigned by a F-LEX constraint). This lexical case is assigned even when the verb is elided. In (32b) structural accusative case is assigned to 'who' as the object of the verb *loben* 'flatter' (again, even though the verb and the rest of the IP is elided), which does not trigger lexical case.

(32) sluicing in German (Merchant 2001:42-43)

a. Er will jemandem schmeicheln, aber sie wissen nicht, {wem /*wen}.
*He wants to flatter someone-DAT, but they don't know who-DAT/*who-ACC (~~he wants to flatter~~)*

b. Er will jemanden loben, aber sie wissen nicht, {*wem /wen}.
*He wants to flatter someone-ACC, but they don't know *who-DAT/who-ACC (~~he wants to flatter~~)*

The sluiced clauses show that indeed elided structure and lexical entries can control structural and lexical case, respectively. Structural case with elision was illustrated in tableaux (28, 30), but we have not yet seen lexical case. In the tableau below, we will consider a simplified input. This is just the input for the relative clause without the infinitive construction, such that the expected relative clause output would be *wem ~~er schmeichelt~~* 'who ~~he flatters~~'. As demonstrated in this tableau, the case-assigner for lexical case must dominate the case-assigner for structural case in order for lexical case to surface. Because these are general constraints, it does not matter that the lexical entries are elided. If the input contained *loben* 'flatter', a verb

that does not have the [+dat] feature, an output with accusative 'who' is expected because there is no conflict with F-LEX (i.e. there is no semantic feature for the output to faithful to) and so structural case is assigned by SC-COMPVP.

(33) lexical case in German

/3s-AGENT schmeicheln[+dat] wer [+rel] [+elide]/	F-LEX	SC-COMPVP
wen-ACC	*	
☞ wem-DAT		*

(34) F-LEX » SC-COMPVP

5.3 Local Summary

The analysis of German has shown that there are indeed more case-assigners in German than there are in English. Specifically, in the ranking that accounts for German, the *CASE constraints are dominated by a variety of other constraints that control case. This ranking does not allow default case to surface in contexts where it does surface in English. The prediction is made that in any language, the constructions that use default case are determined by the ranking of the *CASE constraints with respect to the case-assigners.

6. Factorial Typology

When new constraints are proposed in an OT framework, it is desirable to consider what predictions are made by the existence of the constraints by looking at a factorial typology. Given three types of potential case assigners, STRUCCASE, F-LEX, and F-θ, different grammars depend on how these constraints are ranked in reference to the *CASE constraints. Specifically, whichever of the potential case-assigners dominate the *CASE constraints determines where assigned case appears in the language and where default case appears. In one way this variability is advantageous because languages do differ from one another as to whether default case or assigned case appears in a given construction. In another way, however, it is possible that too much variability is predicted by the theory presented here.

Imagine a constraint ranking where the *CASE constraints dominate all STRUCCASE, F-LEX, and F-θ constraints. Such a language would only utilize one case, whichever is the least marked, meaning all DPs would have default case. Whether or not such a language exists depends on whether *case* refers to abstract case or to surface morphological marking. If the latter, it is clear the Mandarin Chinese is such a language, where neither nouns nor pronouns receive any sort of overt case-marking (Yip and Rimmington 1997:8,20), meaning some default case is always signaled by a null marker. However, Chinese can still be said to have abstract case, as diagnosed by movement, verb type, and noun meaning (Li 1971).

Thus, the decision should be made as to whether or not the constraints cited and proposed in this paper refer to abstract case or to surface case-marking. Either choice has undesirable consequences. If all the constraints refer only to surface case-marking, the existence of a language like Chinese is predicted and the factorial typology does indeed correlate with the set of real languages. However, the system presented here would lose a significant amount of explanatory power because abstract case is not accounted for at all. On the other hand, if the constraints discussed here refer both to abstract and surface case, as was the original intention, the factorial typology does not correlate with real languages. A language without any diagnostics for abstract case is unprecedented to my knowledge. I argue against Woolford's fixed hierarchy because it is too restrictive, but in the process I have proposed a constraint set that is too permissive.

At present, I do not have a solution to this dilemma, but there is a reason it is perhaps not so problematic. While there is a significant emphasis on factorial typologies in any OT work, it is also recognized that not every permutation of the constraints should compose a real grammar. For example, one logically possible constraint ranking is one in which every markedness

constraint dominates every faithfulness constraint (and vice versa). There is no known (or expected) language, however, in which this is so. Such a language would map every phonological input onto the least marked syllable or every semantic input onto the least marked sentence. The reason such a language does not exist is not because theory predicts it to be impossible but because it would fail as a communication system. With this in mind, I believe that the "all default case" language should not exist for the same reasons. There is a possible ranking that leads to all DPs having default case, but such a ranking would not be useful for communication and so such a grammar would never arise. There thus seems to be a diachronic explanation for why certain rankings do not correlate with actual grammars. If a diachronically sensible explanation can be found, it should not be troubling when certain constraint rankings are not attested.

7. Conclusions

This paper presents a theory of default case in OT syntax based in part on data from bare pronoun answers to questions in English and German. I follow Woolford's (2001a) claim that non-structural case is controlled by faithfulness constraints, and I propose that structural case is controlled by markedness constraints. Default case does not fit into either of these patterns, but rather it is an example of emergence of the unmarked as determined by the ranking of a series of *CASE constraints. This proposal goes against Woolford's proposal that these *CASE constraints exist in a universally fixed ranking.

The constraints proposed here were used to account for default case in English bare pronoun answers and assigned case in German bare pronoun answers. When the analysis of English was extend to infinitives, the need for both general and contextual *OVERTSUBJ was demonstrated. Further support for the use of structural case in bare pronoun answers in German

came from sluicing.

The difference between English and German is directly related to the ranking of case-assigners relative to the *CASE constraints. More case-assigners dominate the *CASE constraints in German. This led to the central theory proposed here: case-assigning constraints in a language must dominate all *CASE constraints. If a given DP cannot receive case from the case-assigners, it will have default case.

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