ACCENT AND FOCUS IN OT:
A CROSS–LINGUISTIC PERSPECTIVE

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written by

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Acknowledgements

Abstract

Patterns of accent placement show cross-linguistic variation. In this thesis I will present a formal account of this variation within an Optimality Theoretic (OT) framework. Following a suggestion in Schwarzschild (1999), I will propose that accent pattern is determined by a grammatical principle (roughly: stress the most embedded constituent) which in English, but not in Italian can be overruled by competing pragmatic principles. This idea presupposes the general theoretical framework of OT. I will try to implement this idea in two different constraint-based accounts of accent placement: one based on Givenness by Schwarzschild (1999), and a BiOT account described in Aloni et al. (2005). As I will show, Schwarzschild's approach, well equipped for English, due to its hybrid constraints is not adequate for cross-linguistic variation. Aloni et al.'s account however, in which structural and pragmatic constraints are clearly distinguished, proves to be more flexible and can be extended to account for cross-linguistic differences.

1 Introduction

Patterns of accent placement show cross-linguistic variation (the following examples are taken from Ladd 1980). In urgent need of a cigarette, in English one would say (1a), while in Italian one would say (1b) (in the examples and henceforth, the prosodically most prominent constituent of a sentence is indicated by capitalization):

(1)   a.   Does anybody have a CIGARETTE? I WANT a cigarette.
        b.   Qualcuno ha   una SIGARETTA? Voglio   una SIGARETTA.
            Anybody has a   cigarette?   want.1p a   cigarette.

In a discussion of a strange man and the things that are unusual about him, in English a sentence like (2a) could be uttered, in Italian it would be (2b):

(2)   a.   It's the SHOES he wears.
        b.   Sono le   scarpe che PORTA
            it's   the shoes that wear.3p

In this thesis I will present a formal account of this cross-linguistic variation. Following a suggestion in Schwarzschild (1999), I will propose that accent pattern is determined by a grammatical principle (roughly: stress the most embedded constituent) which in English, but not in Italian can be overruled by competing pragmatic principles. This idea presupposes the general theoretical framework of Optimality Theory (OT).

I will try to implement this idea in two different constraint-based accounts of accent placement: one based on Givenness by Schwarzschild (1999), and a BiOT account described in Aloni et al. (2005).

It turns out that Schwarzschild's approach, well equipped for English, due to its mixed constraints is not adequate for cross-linguistic variation. Aloni et al.'s account however, in which structural and pragmatic constraints are more clearly distinguished, proves to be more flexible and can be extended to account for cross-linguistic differences.

Schwarzschild's theory is a very influential analysis of English accent patterns which can be easily formulated in OT. Different relative ranking of a grammatical principle (Schwarzschild's HEADARG) and Schwarzschild's pragmatic principle (AVOIDF) will be assumed for English and Italian to explain cross linguistic variation. As we will see, however, this proposal encounters serious empirical problems. Reverting the order of these constraints has a number of unwanted consequences due to the double nature of the AVOIDF constraint. The main conclusion of this attempt is a negative one: Schwarzschild's approach, well equipped for English, is not adequate for cross linguistic variation. As far as I know this constitutes a new original argument against Schwarzschild's influential approach.

The proposal is then implemented in the framework of Aloni et al. (2005) which formalizes ideas from Reinhart (1996) in Bidirectional OT (BiOT) to predict accent patterns for English. By applying our hypothesis, the implementation is shown to explain a large number of cross-linguistic examples as well, including the facts in (1) and (2). Due to its weaker, clearly distinguished structural and pragmatic constraints and the flexibility gained by the bidirectional approach, reranking of constraints in this approach also accounts for the Italian examples which proved to be problematic for Schwarzschild's account.

The thesis is structured as follows: In section 2 I provide some terminological background related to focus, I introduce theories of accent placement in general and give a short introduction to OT. Section 3 covers my implementation within Schwarzschild's Givenness approach. It first introduces Schwarzschild's theory and his notion of Givenness. In the second part, I explain several cross-linguistic mechanisms of marking information structure and investigate how the theory could account for them. The examples are then explored in a BiOT approach in section 4. Therefore I introduce Aloni et al. (2005) and BiOT in general. In section 5 the results of my implementations will be discussed. I compare the approaches with respect to structural and explanatory differences and draw conclusions on their relevance for the different results. Finally, in section 6 I give further cross-linguistic and intra-linguistic evidence for the necessity of a subdivision of the pragmatic constraint(s). While such a splitting has been proposed in Aloni et al. (2005) and can be integrated straightforwardly in their system, it is not in the spirit of the unifying Givenness account of Schwarzschild for which such an implementation proves to be problematic.

2 Background

This section provides some terminological background on focus related matter and introduces possible approaches of focus interpretation.

2.1 Focus

In the following, we introduce the concepts *pragmatic* and *semantic focus* and *narrow* and *broad focus.*

Focus is an obscure category and there is no uniform notion of focus in the literature. It is taken to reflect to some part the information structure of a sentence and is mostly assumed to be prosodically marked by a pitch accent. Possible linguistic layers in which focus may be located are phonetics, phonology, syntax, semantics, pragmatics or psychoacoustics (Beaver et al. 2004) which is a source of terminological confusion. The interdependence of these different kinds of foci is often controversial and lacks empirical confirmation. Depending on the general attitude of a theory, one or the other aspect may be taken as more important. In most parts of this paper, we use a simple question-answer paradigm for determining what may be called the *pragmatic* focus of a sentence. For abbreviation, we just write *focus* and try to mark usage of other notions of focus explicitly. As should be emphasized, however, this is only one –even though a commonly used– way of characterizing focus. In section 5, where we will compare two approaches of focus interpretation, different notions will become significant.

As Paul (1880 : 283) has first noticed, sentence (3)

(3)   Karl fährt morgen   nach Berlin.
       Karl goes tomorrow to   Berlin.
       'Karl goes (by wheel) to Berlin tomorrow'

may be taken as an answer to different questions depending on its intonation contour:

(4)   a.   Wohin fährt Karl morgen?
             'where'
             Karl fährt morgen nach BERLIN.
             'to Berlin'
       b.   Wann fährt Karl nach Berlin?
             'when'
             Karl fährt MORGEN nach Berlin.
             'tomorrow'
       c.   Wie reist Karl morgen nach Berlin?
             'how'
             Karl FÄHRT morgen nach Berlin.
             'drives'
       d.   Wer fährt morgen nach Berlin?
             'who'
             KARL fährt morgen nach Berlin.
             'Karl'

We take the constituent in the answer which corresponds to the *wh*-word in the question to be the

focus of the sentence. In the examples above, the items in focus are those bearing the main sentence stress. In Paul's terminology the focal constituent is called *psychological predicate*, while the non-focused part is called *psychological subject*, in contrast to their grammatical correlates. Assuming a bipartition of information structure, we refer to the latter as *topic*.[1] Other dichotomies used in the literature to refer to similar concepts as topic and focus are *theme–rheme* (Sgall et al. 1973), *topic–comment* or *given–new*. In the following, we will often use the question-answer paradigm in order to fix a certain focus in the answer or to test, whether an intonation contour determining a focus is appropriate with respect to a question or not. In case it is, as in the question-answer pairs in (4) above, we call the answer *felicitous* with respect to the question. If focus and *wh*-word do not correspond though, as for instance in the answer of (4a) and question (4b), the answer is called *infelicitous*. Infelicitous answers will be indicated by the prefixed symbol #. (5) shows both answer candidates, (5a) being felicitous and (5b) infelicitous:

(5) Wann fährt Karl nach Berlin?
     'when'
     a. Karl fährt MORGEN nach Berlin.
         'tomorrow'
     b. #Karl fährt morgen nach BERLIN.
         'to Berlin'

Foci related to context (as for example a preceding question) like in the examples above are called *free* or *pragmatic* foci. We turn now to foci which are associated with so-called *focus sensitive particles* as e.g. *only* or *always*. Since these foci are in the scope of such a particle and can be evaluated sentence-internally, they are also called *bound* and *semantic* foci. Semantic foci usually play a role in the truth conditions of the sentence. Compare examples (6a) and (6b) which differ in their intonation contour:

(6) a. John only introduced MARY to Sue.
     b. John only introduced Mary to SUE.

While (6a) is true just in case John introduced nobody except Mary to Sue, for (6b) to be true he may have introduced anybody to Sue, but Mary he introduced to nobody else than to Sue. In the following sections, we are mostly concerned with pragmatic foci. However, there is disagreement on whether a clear-cut distinction of semantic and pragmatic focus can actually be drawn and some authors (e.g. Schwarzschild 1997) even deny the existence of purely semantic foci. We return to this problem in section 5, where different approaches to so-called *second occurrence foci* will be discussed. Now we turn to the relation between focus and prosodic marking.

It is widely accepted that in most languages focus is associated with the prosodically most prominent part of an utterance,[2] as we have assumed for the English examples until now. This part is associated with the so-called *nuclear stress* or *nuclear accent*[3] and is realized as a pitch accent: "A pitch accent may be defined as a local feature of a pitch contour – usually but not invariably a *pitch change*, and often involves a local maximum or minimum – which signals that the syllable with which it is associated is *prominent* in utterances" (Ladd 1996:45f). In this work, we refer to

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[1] In a tripartite account as proposed e.g. by Vallduví & Engdahl (1996) and Büring (1999), material outside the focus is called *background*, while *topics* are parts of the background which are phonetically marked, albeit differently to constituents in focus.

[2] See Gundel & Fretheim (2003) for languages which might be excepted.

[3] Both notions are used synonymously here. But see Ladd (1996:155) where the phonological category *accent* is distinguished from its possible phonetic realization as *stress*.

what Bolinger (1961) and Jackendoff (1972) call an A accent and what is annotated as a H* tone (H stands for *High*) in Pierrehumbert (1980).[4]

The topic-focus distinction has often been associated with a distinction between what is already old/given/present in the discourse and what is new (Gundel & Fretheim 2003). Taken the terms in a pre-theoretic notion and abstracting from problems of adequate definitions, example (5a) above illustrates this association: everything which has already appeared in the *wh*-question is attributed to topic, while *morgen* as the information asked for, is new and therefore in focus. How does the intonation contour reflect this information structure? Does the hypothesis hold that everything which is given remains prosodically unmarked, while all new items will be accented?

The first part of the hypothesis can not be true as examples like (7) show:

(7)   Who did John's mother praise?
        She praised JOHN.

In this case, *John* will be accented in the felicitous answer although he has already been introduced in the discourse and should therefore count as *given*.[5]

But also the second part of the hypothesis does not hold. To explain this, we introduce a further terminological distinction into *narrow* and *broad* focus (Ladd 1980). Until now we have only considered examples where the focus consisted of a single item bearing the nuclear accent. In cases like this we speak of *narrow* focus. However, take (6a) again with stress on the object: *Karl fährt morgen nach BERLIN.* It would also be a felicitous answer to the questions *Was macht Karl? 'What does Karl do?'* or *Was ist los? 'What happens?'* In the first case, the *wh*-word corresponds to the whole VP, while in the second the whole sentence is in focus. When a focus comprises more than one constituent, it is called *broad*. In (8) we list the three possible questions the sentence with stress on the object would be a felicitous answer to.[6] In the answers, we indicate the focus by [.]$_F$.

(8)   a.   Wohin fährt Karl morgen?
                Karl fährt morgen nach [$_{obj}$ BERLIN]$_F$.
        b.   Was macht Karl?
                Karl [$_{VP}$ fährt morgen nach BERLIN]$_F$.
        c.   Was ist los?
                [$_{IP}$ Karl fährt morgen nach BERLIN]$_F$.

While the answer in (8a) has a *narrow focus*, the foci in (8b,c) are *broad*. Sentences like (8c), where the focus comprises the whole sentence, are also called *all-new*, *thetic* (Schmerling 1976), *all-focus* or *out-of-the-blue* sentences. From the examples with broad focus it becomes clear now that the second part of our hypotheses doesn't hold either: not all items which are new are therefore stressed. Since most focus theories assume that at least one item of a constituent in focus has to be stressed, the main question that arises is: what are the principles that determine the location of the accent

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[4] Often focus is further distinguished into *informative* or *novelty* and *contrastive* focus (cf. Gundel & Fretheim 2003 : sec. 1.3) which is said to be marked by different kinds of pitch accents: while a H* tone (Jackendoff 1972's A accent) indicates information focus, contrastive focus is marked by a complex L+H* tone (L for *Low*) which Jackendoff calls a B accent. We are only concerned here with foci of the first kind. See also Schwarzschild (1999) for a unifying account.

[5] It might be argued, though, that John has not been introduced as an accessible discourse referent by the expression *John's mother*.

[6] See Baumann et al. to appear, though, who claim that narrow and broad foci are phonetically marked differently. In this case, the answer might not be felicitous in all three cases. In this work, however, we refer to accent marking on a phonological (rather than phonetical) level and assume, that ambiguities between narrow and broad focus indeed exist. This view is accepted in most of the literature.

within a focus? Possible approaches will be presented in the next section.

2.2   Theories of accent placement

Theories which account for accent placement within focus are often categorized in the literature as either having a *structural*, syntax-based approach or a *pragmatic* approach (cf. *structural* vs. *radical* FTA, Ladd 1996).

Early structural accounts of accent placement have been suggested in generative grammar e.g. by Chomsky & Halle (1968) and Jackendoff (1972). They strongly refer to the syntactic structure of sentences and were motivated by the observation, that nuclear stress very often is located at the right edge of constituents in focus, as illustrated in example (9) and in its syntactic tree (10):

(9)   [$_{IP}$ John [$_{VP}$ loves [$_{obj}$ MARY]$_F$]$_F$]$_F$.

(10)

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                              IP
                          ╱        ╲
                      Subj          VP
                       |          ╱    ╲
                      John       V      Obj
                                 |       |
                               loves   Mary
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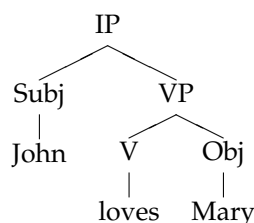
For the three possible foci *object*, VP and IP, nuclear stress always falls on the object *Mary* as the right-most constituent. To account for this, Chomsky and Halle introduced the *Nuclear Stress Rule* (NSR) which requires accent placement on the right-most constituent. Thus the infelicity of accent placements in (11b,c) in a neutral context could be explained by violation of the NSR:[7]

(11)   Hey, guess what?
     a.   John loves MARY.
     b. #John LOVES Mary.
     c. #JOHN loves Mary.

In other West Germanic languages as German and Dutch, though, the accented item is not always the last, but the most-embedded syntactic constituent as demonstrated in the examples (12b) and (12c) below:

(12)   a.   English: I read a BOOK.
        b.   German: (Dass) ich ein BUCH las.
        c.   Dutch: (Dat) ik een BOEK las.

Therefore the NSR has been revised by some authors (e.g. Cinque 1993, Reinhart 1996) to require accent on the most embedded constituent, such that it accounts for other West Germanic languages as well.[8]

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[7]The example is taken from Aloni et al. (2005)

[8]See Cinque (1993) and Reinhart (1996) for further details on the notion of embeddedness.

However, Bolinger (1972) among others attacked the structural view by providing counter examples to the NSR. In all felicitous sentences in the examples (13) and (14) below, nuclear stress doesn't fall on the most embedded constituent and thus the NSR is violated:

(13)   What happened?
    a. #My parents CALLED.
        My PARENTS called .
    b. #The telephone is RINGING.
        The TELEPHONE is ringing.
    c. #The sun is SHINING.
        The SUN is shining.
    d. #He killed SOMEONE.
        He KILLED someone.

(14)   What did John's mother do?
    a. #She praised HIM.
    b.   She PRAISED him.

It is the phenomenon which Ladd (1980) later called *deaccenting*, which lead many to reject the NSR and abandon a structural account. Instead, a pragmatic explanation has been put forth in order to account for accent placement in the examples above. According to this account, the informational state of constituents is not only relevant for the focus-topic (or focus-background) distinction but also determines accent placement *within* the focus. Thus, deaccenting of the verb in (13b) could be explained by *ringing* being predictable after the previous mention of *telephone*. By this, the importance of the verb is decreased in an assumed hierarchy of importance, and the noun will be stressed instead. Reference to the dichotomy of new/given introduced in the last section, accounts for accent placement in (14) with a VP focus: since *him* is coreferential with *John* in the preceding context and therefore given, nuclear stress falls on *praised* as the *new* item.

2.3   Cross-linguistic variation

Cross-linguistic investigations among others by Ladd (1980, 1996), Cinque (1993), Vallduví & Engdahl (1996) and Reinhart (1996) lead to objections against a purely pragmatic account again and corroborate structural theories: if accent placement were a purely pragmatic phenomenon we would not expect cross-linguistic variation. However, as these authors have observed some Romance languages, unlike English, refuse deaccenting. Instead, although English shifts nuclear accent left, in sentences with identical information structures, accent placement for Romance languages in most cases is reliably predicted by the NSR. Ladds examples from section 1, here repeated as (15) and (16), and example (17) for English and Catalan from Vallduví & Engdahl (1996 : 39) illustrate the difference in accenting:[9]

(15)   a.   Does anybody have a CIGARETTE? I WANT a cigarette.
    b.   Qualcuno ha una SIGARETTA? Voglio una SIGARETTA.

(16)   a.   It's the SHOES he wears.
    b.   Sono le scarpe che PORTA

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[9]Repeated examples will be shown without glosses.

(17) a. The old people at the hospital looked horrible. Especially the old MEN.
      b. Els vells de l'hospital   feien   pena. Sobretot   els homes VELLS.
          The old   at the.hospital 3p-impf-make pity.   especially the men   old.

A pragmatic account which ignores language specific structural attributes and only refers to information states of constituents cannot account for prosodic differences in parallel examples like (17) above. A cross-linguistic comparison of stress patterns could therefore shed some light on the debate. It could test the adequacy of different approaches and provide evidence whether universal claims hold or not.

As the discussion above has shown, neither a purely pragmatic nor a structural account rigidly based on the NSR are sufficient to treat all cases of stress assignment properly. A solution to the dilemma between structural and pragmatic approaches is provided by constraint-based theories as *Optimality Theory* (OT). Instead of taking a radical position at either of the two sides, both structural and pragmatic factors are integrated into one system of structural and pragmatic constraints. These constraints are assumed to be universally valid, but violable, and are hierarchically ranked with a possibly different ranking for different languages.

The achievement of a constraint-based approach is thus twofold: on the one hand, by integrating violable constraints of both kinds it resolves the dilemma between a structural and a pragmatic approach. This has been treated in Schwarzschild and Aloni et al. The second part concerns the topic of my thesis: by assuming a hierarchy of universal pragmatic and syntactic constraints, a reranking could provide an elegant account for systematic cross-linguistic variation. The main hypothesis of my thesis is this:

(18) **Main hypothesis:** For certain languages (like e.g. English), some pragmatic constraints
      are higher ranked than syntactic constraints, resulting in deaccenting. A reranking which
      raises the syntactic constraints above one or more pragmatic constraints avoids deviation
      from the default accent location, by this accounting for accent placement in languages like
      Italian.

To show whether this can be achieved using the theories of Schwarzschild and Aloni et al., will be subject of what follows. Since both theories will be presented within an OT framework, the next section provides a short introduction to OT.

2.4   Optimality Theory (OT)

Optimality Theory (OT) is a constraint-based approach. Those approaches differ from rule-based approaches in that they do not specify sequences of steps to be executed, but rather properties of a solution in form of constraints to be satisfied. Constraints may be *hard* or *soft*, depending on whether they have to be fulfilled obligatorily or are allowed to be violated. Soft constraints are generally ranked in a hierarchy in order to determine severeness of violations.

OT, developed by Prince & Smolensky (1993), is the most prominent constraint-based theory in linguistics. Although it had its greatest impact in phonology and has become the dominant theory in this field since it has soon been applied to syntax, semantics and pragmatics, too. The two approaches to be introduced in the next chapter, the Givenness approach by Schwarzschild (1999) and the BiOT approach by Aloni et al. (2005), follow a constraint-based paradigm. While the former is not implemented in OT originally, the latter is formulated in a bidirectional OT (BiOT) framework (Blutner 2000), which is a more recent variant of OT taking both, speaker and hearer perspective

into account. Schwarzschild's account can be presented in an OT framework without significant changes, though.[10] In order to alleviate a comparison of the two theories, both are introduced using OT specific mechanisms and vocabulary. In the following, we give a short overview of OT.

2.4.1 How OT works

OT proposes a Universal Grammar which consists of a set of violable constraints. The constraints represent universal properties of language. Language specific differences are explained by a language-particular ranking of these constraints resulting in systematic variations between languages.

The architecture of OT is as follows: given a certain input (e.g. a question fixing a context) the mechanism **GEN** (for Generator) generates a (theoretically infinite) set of candidates (e.g. answers to the question with different intonation contours). The only restriction put on GEN is that the objects are linguistically well-formed. From these candidates, **EVAL** (for Evaluator) selects the optimal candidate using the set of universal constraints contained in **CON** (for Constraints) in its language specific ranking.

When EVAL selects the optimal candidate with respect to a certain constraint ranking, (i) violations of lower ranked constraints are tolerated in order to satisfy a higher ranked constraint. And (ii), ties of higher ranked constraints are resolved by lower ranked constraints. I.e. a candidate is selected when either all competitors violate higher ranked constraints, or in case of a tie on higher ranked constraints of all viable candidates, if it has less violations of a lower ranked constraint. A tie appears if either all relevant candidates *satisfy* the higher ranked constraint, or all *violate* it. In both cases the conflict is adjudicated by a lower ranked constraint.

2.4.2 Interpreting OT tableaus

The processes described above are usually presented in from of OT tableaus of the kind shown in figure (19). The relevant constraints are ranked across the top in the right part, going from the highest ranked constraint on the left to the lowest ranked on the right. The first column contains the input on the top and a selection of the candidates in the further rows. Since the generated set is infinite, only the most interesting or critical candidates for the problem in question are shown. Sometimes the candidates will be numbered for ease of reference in the explanation. The optimal candidate is indicated by the symbol "☞". Violations of constraints are indicated by asterisks (*) in the according column of each line. *Fatal* violations, i.e. violations with cause a candidate to be eliminated from the set, are marked by an exclamation mark.

(19) A toy example

	{Some context}	C1	C2	C3
	a. $\alpha 1$		!**	
	b. $\alpha 2$	!*		
	c. $\alpha 3$		*	!*
☞	d. $\alpha 4$		*	

For illustration, we consider a toy example. Suppose the three constraints C1, C2 and C3 with the ranking C1 ≫ C2 ≫ C3, where "≫" means *is higher ranked as*, and four candidates $\alpha 1$–$\alpha 4$, labeled

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(a–d). These candidates will now be evaluated against the constraint ranking. Consider candidate (b) with one violation of C1. Since C1 is the highest ranked constraint, its violation is more severe than e.g. a violation of C2 as in candidate (d). Since no other candidate violates C1, the violation of (b) is fatal (indicated by "!") and the candidate will be eliminated. Now compare candidates (a) and (d), both violating C2 only: in this case, the number of violations becomes decisive and (a) with two violations looses against (d) with only one violation. Finally, the constellation of the two remaining candidates (c) and (d) constitutes a tie: for both, most severe is the violation of C2, which they both violate once. In situations like this, the competition is resolved by lower ranked constraints: since only (c) violates the lower ranked constraint C3, this violation is fatal and candidate (d) remains as the optimal candidate, indicated by "☞" in the tableau.

Thus provided with the relevant theoretical background, we now turn to the main part of the thesis.

3 A constraint-based approach based on Givenness

Schwarzschild (1999) presents a constraint-based explanation of the relation between accent placement and focus which strongly relies on his notion of *Givenness* and the formalism to calculate *Given* constituents in a sentence relative to a context.[11] It is based on four constraints. The first, GIVENNESS, requires un-F-marked constituents to be Given. Another constraint, AVOIDF, minimizes F-marking in sentences, while a third constraint requires undominated F-marked constituents to contain stress. Finally, a forth constraint accounts for head-argument asymmetries in accent patterns. In interaction, the constraints provide a unifying account for different kinds of foci like *novelty* and *contrastive focus*[12] and account for phenomena of *deaccenting* in English. Schwarzschild notes that by reranking the constraints the formalism may also account for non-deaccenting languages like Italian (Schwarzschild 1999 : 174).

Deviating from Schwarzschild (1999), the theory is presented here in an OT framework (as motivated in section 2.4). The following section first describes and motivates the four constraints and gives a definition of Schwarzschild's notion of Givenness. In the second subsection we modify the ranking as suggested to account for cross-linguistic examples and check whether the Givenness account makes the right predictions for accent placement for other languages than English as well.

3.1 Schwarzschild (1999)

3.1.1 GIVENNESS and AVOIDF

The two major constraints in Schwarzschild's framework are GIVENNESS and AVOIDF. GIVENNESS refers to the given-side of the given–new dichotomy which has been discussed in section 1. There we have explained the difficulties of relating nuclear stress with novelty of constituents directly which has been illustrated by the examples here repeated as (20): Prominence may not be equated with novelty as example (20b) shows:

(20)   Who did John$_i$'s mother praise?
        a.   She praised BILL.
        b.   She praised JOHN$_i$.

While in (20a) *Bill* as the newly introduced discourse referent is stressed, in (20b) which is also a felicitous answer to (20) stress falls on *John* who is already given in the context (and therefore not new).

The difficulties to associate accent with novelty lead Schwarzschild to the proposal to take Givenness instead as the principle accent placement depends on. However, it does not hold that everything without accent is already given either, as we saw in examples of broad focus like (21):

(21)   What did John's mother do?
        She praised BILL.

Although stress falls on the object *Bill* only, the answer has a broad VP-focus and the verb *praised*, for instance, is not given and still does not bear an accent. In order to account for phenomena

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[11]In the following, we write *Given* with an initial capital when it is used in Schwarzschild's sense which will be defined in section 3.1.2 below.

[12]See footnote 4 on page 7.

of broad focus, F-marking has been introduced as an abstract syntactic attribute which mediates between the phonological and the semantic layer, i.e. between nuclear stress and focus. F-marked constituents are labeled with F in the syntactic tree of a sentence. While all stressed items are taken to be F-marked by default, not all F-marked constituents have to be stressed. Selkirk (1995) refers to the former as the *Basic F-Rule*[13] and has proposed the *focus projection principle (FPP)* which states conditions under which F-marking may project from a constituent to higher constituents. By this mechanism, broad focus as in (21) can be accounted for as illustrated in (22):

(22) What did John's mother do?
   a. She praised [BILL]$_F$ (Basic F-Rule: An accented word is F-marked)
   b. She [praised]$_F$ [BILL]$_F$ (Projection Principle (i): F-marking of a internal argument licenses F-marking of the head)
   c. She [[praised]$_F$ [BILL]$_F$]$_F$ (Projection Principle (ii): F-marking of a head licenses F-marking of the phrase)
   d. She [[praised]$_F$ [BILL]$_F$]$_{Foc.}$ (Undominated F-marked constituents are considered to correlate with the focus and are marked with Foc)

However, there are examples for which the principle doesn't work if we assume the wh-word-focus correspondence (example by Büring 1996, cited in Schwarzschild 1999):

(23) {John drove Mary's red convertible. What did he drive before that?}
   He drove [her BLUE$_F$ convertible]$_{Foc}$

What corresponds to the *wh*-word in the question is the NP, marked with Foc in the example. However, the FPP does not allow F-marking to project downwards in the syntactic tree, i.e. from a higher to a lower constituent. For instance, (24a) with nuclear stress on the verb would not be a felicitous answer to a question indicating object focus, since F-marking cannot project from the verb to its argument:

(24) Who did Mary praise?
   a. #Mary [PRAISED]$_F$ Bill.
   b. Mary [PRAISED]$_F$ [Bill]$_F$

So, in (23) above, F-marking cannot project any further from a preverbal adjective. Thus a NP focus will not be predicted.

Due to problems of this kind, Schwarzschild abandons the FPP and allows a random assignment of F-markings to constituents of a sentence. The final distribution is then determined by the interaction of the two constraints GIVENNESS –which may require F-markings– and the violable AVOIDF which minimizes them:

(25) **GIVENNESS:** A constituent that is not F-marked is Given

(26) **AVOIDF**: Do not F-mark

GIVENNESS assures, that all constituents which are not F-marked are Given. It doesn't prohibit F-marked constituents to be Given, though, as illustrated in example (20b) above. In order to avoid

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[13]The *Basic F-Rule* is a further constraint implicitly assumed by Schwarzschild. It is not considered to be violable, though, and is therefore not integrated in the ranked constraint set.

unnecessary F-markings AVOIDF is introduced which prefers candidates with less F-markings. For most cases, the ranking of these two constraints, GIVENNESS ≫ AVOIDF, assures that as little constituents as necessary are F-marked to be consistent with GIVENNESS.

In tableau (27) we give a simple example of the interaction of the two constraints GIVENNESS and AVOIDF.[14] For the moment, we use an intuitive notion of what counts as Given until in section 3.1.2 Schwarzschild's definition of Givenness will be presented.

(27)   The Constraints in Interaction

	{What did John$_i$'s mother do?}	GIVEN	AVOIDF
	a. She [praised [HIM$_i$]$_F$]$_{Foc}$	!*	**
	b. She [praised$_F$[HIM$_i$]$_F$]$_{Foc}$		!***
☞	c. She [PRAISED$_F$ him$_i$]$_{Foc}$		**
	d. She praised [HIM$_i$]$_{Foc}$	!**	*

She in all examples remains un-F-marked since the pronoun refers to John's mother which is already present in the context and therefore can be considered as Given. The question which constitutes the context indicates VP focus.[15] Consider candidate (d): it only violates AVOIDF once by putting stress on *him*. However, the un-F-marked verb and the VP are required to be Given by GIVENNESS. Since both are not contained in the preceding context, though, GIVENNESS is violated twice. Now we turn to the other candidates, which all have VP focus. It has to be decided which of the two possible positions within the focus nuclear accent takes. Consider candidate (a): the accent falls on *him*, which is therefore F-marked and doesn't have to be checked for Givenness since GIVENNESS only refers to un-F-marked constituents. But by this it violates AVOIDF once more. *Praised* is not F-marked and should therefore be Given in the context. However, nothing appears in the context which licenses the verb to be Given; thus the missing F-mark causes a violation of GIVENNESS. Candidate (b) avoids this violation by F-marking the verb, everything else being equal, resulting in an additional violation of AVOIDF, though. Finally, in candidate (c) the F-marked verb is accented instead of the object. Is it possible now to leave *him* un-F-marked? Him is coreferential with John and therefore Given, thus it doesn't have to be F-marked. Candidate (c) therefore violates AVOIDF only two times again. Comparing the violations, we see that only (a) and (d) violate the high ranked GIVENNESS constraint and are therefore out. The two remaining candidates both obey GIVENNESS but differ in the number of AVOIDF-violations. Now we see that AVOIDF selects from the remaining candidates the one with the fewest F-markings (c) with nuclear accent on the verb as optimal (indicated by the symbol "☞").

The benefit from choosing Givenness instead of novelty as the relevant dimension for determining F-marking of constituents is that while the latter is rather vague the former is straightforward and can be defined more easily. Schwarzschild (1999) gives a formal account of his notion of Givenness which is presented in the following section.

3.1.2 Calculating Given constituents

Schwarzschild (1999 : 151) gives the following definition of Givenness:

(28)   **Givenness:**
        An utterance U counts as Given iff it has a salient antecedent A and

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[14]In the tableaus the GIVENNESS constraint is abbreviated as GIVEN

[15]A reviewer, Bernhard Fisseni, remarks that the question may also indicate NP focus because an answer like *She did her hair* would also be felicitous.

a. if U is type e, then A und U corefer;
b. otherwise: modulo ∃-type shifting, A entails the Existential F-Closure of U.

(29) Existential F-closure of U:
the result of replacing F-marked phrases in U with variables and existentially closing the result, modulo ∃-type shifting

According to (28a), if the item in question refers to an individual (an entity considered as being of type e in the *Theory of Types*[16]) and it has a salient antecedent referring to the same individual, i.e. they are coreferent, the item counts as given. We had an example for this notion of Givenness in (27) already where we considered the pronoun *him* to be Given which referred to *John* in the preceding question. Another example is shown in (30): here, *show-off* is Given since it refers back to *Bill*

(30) You shouldn't hang around with Bill. I don't like this show-off.

The condition for the antecedent to be *salient* is meant to account for several potential factors which might be relevant in making something in the context accessible and comprises concepts of "recency and frequency of mention (Allerton 1978: 142–143) as well as grammatical role and position in the sentence" (Schwarzschild 1999 : 148).

The second part (28b) of the definition is more complex. Here Schwarzschild's account of Givenness is based on logical entailment: constituents of an utterance are Given if they are entailed by prior discourse. Since entailment only works for propositions, but Givenness should be applicable to any type of constituent, *Existential Type Shifting* (ETS) is applied first which "raises expressions to type t by existentially binding unfilled arguments" (p. 147). For instance, *apple* should count as Given after the expression *green apple* in prior discourse. In order to calculate this, ETS is applied to both expressions and then entailment is checked:

(31) a. apply ETS to 'green apple': $\exists x(\text{green apple}(x))$
b. apply ETS to 'apple': $\exists x(\text{apple}(x))$
c. check entailment: $\exists x(\text{green-apple}(x))$ ENTAILS $\exists x(\text{apple}(x))$

Since the latter proposition is entailed by the former, *apple* counts as Given.

Now consider the more complex example (32) with (32b) being a correction of (32a). Traditionally, the focus in (32b) is considered as contrastive focus and only comprises the corrected item *red*:

(32) a. John ate a green apple.
b. (No,) he ate a RED$_F$ apple.

Only *red* which contains the accent is F-marked, thus according to (25) all other constituents, including all higher syntactical nodes as NP, VP and the whole sentence should be Given. The object *apple* is Given as shown in (31); the adjective *red* is F-marked and therefore doesn't have to be Given. The NP *red apple*, however, is not Given since $\exists x(\text{green apple}(x))$ does not entail $\exists x(\text{red apple}(x))$. Schwarzschild's suggestion is now to replace F-marked constituents, *red* in our case, by

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[16]The *Theory of Types* is a logical system which assigns a type to each natural language expression. The most common types are e for individuals, t for propositions (corresponding to a truth value) or combinations of both (see e.g. Gamut 1991 : chapter 4 for an introduction).

a variable (F-variable) which yields $\exists x[$ (Y apple)(x)$]$ and binding it resulting in $\exists Y \exists x[$ (Y apple)(x)$]$. After these transformations, entailment can be calculated as in (33):

(33) $\exists x($green apple$(x))$ ENTAILS $\exists Y \exists x[$ (Y apple)(x)$]$.

The form the original phrase *RED apple* has now in the consequent is called its *Existential F-closure* which is referred to in the definition of Givenness above.

For illustration of how the formalism works for a whole sentence, we consider example (32) again and check for each constituent separately, whether it is Given or not according to the definition. The constituents to be checked for Givenness are listed in (34) where "$\sqrt{}$" indicates that the check has been successful. Explanations are provided below.

(34)   {John ate a green apple. No,} he ate a RED apple.
   a.   he, ate, a, apple $\sqrt{}$
   b.   RED (F-marked)
   c.   RED apple $\sqrt{}$
   d.   ate a RED apple $\sqrt{}$
   e.   he ate a RED apple $\sqrt{}$

We are going from top to bottom in the steps shown in (34) and start with the terminals in (a): *he* corefers with *John*; according to (28a) from the definition it is therefore given. All other terminals except *red* appear in the context literally and after application of ETS are entailed by the context as shown in (31) and therefore Given according to (28b) from the definition. *Red* in (b) is F-marked and therefore doesn't have to be Given. As the first higher node, we consider the NP *RED apple* in (c): *red* as the F-marked constituent is replaced by a variable and after binding the variable and existentially closing the expression it is entailed by the context which has been demonstrated in (33) and thus Given. Next we check the VP *ate a RED apple* in (d). It can be formalized as $\exists Y \exists x[$ (x ate a Y apple)$]$ which again is entailed by the context and thus Given:

(35) $\exists x[$(x ate a green apple)$]$ ENTAILS $\exists Y \exists x[$(x ate a Y apple)$]$

In a final step we consider the whole IP *he ate a RED apple* in (e). After substitution of *red* with a bound variable we already have a proposition, so type shifting is not necessary anymore: $\exists Y[$(he$_i$ ate a Y apple)$]$. This proposition is entailed by the whole sentence:

(36)   John$_i$ ate a green apple ENTAILS $\exists Y[$(he$_i$ ate a Y apple)$]$

We see that according to Schwarzschild's formalism indeed all constituents except *red* are Given. Thus *red* is the only constituent which has to be F-marked and is therefore correctly predicted as the item to bear the accent, as is shown by the evaluation in the following tableau:

(37)   Evaluation

	{John$_i$ ate a green apple}	GIVEN	AVOIDF
	a. No, he$_i$ ate a red APPLE$_F$	!*	*
☞	b. No, he$_i$ ate a RED$_F$ apple		*
	c. No, he$_i$ ate a red$_F$ APPLE$_F$		!**

From the candidates with one F-marking only (b) with stress on the non-Given item *red* does not violate Givenness. Whenever red is not F-marked, the high ranked Givenness is violated. Candidates which take the alternative option of F-marking more than one item as (c) may not violate Givenness, but are with more violations of AvoidF still less optimal then (b).

3.1.3 FOC and HEADARG

The two remaining constraints in Schwarzschild's system are FOC and HEADARG. While the first constraint assures that each focus contains an accent, the latter accounts for asymmetries in accent placement within head-argument structures. The constraints are defined as follows (p. 170):

(38)   **FOC**: A FOC-marked phrase contains an accent

(39)   **HEADARG**: A head is less prominent than its internal argument

A FOC-marked phrase is a F-marked phrase which is not immediately dominated by another F-marked phrase and corresponds to what is considered to be the focus of the whole phrase. In the examples used here which do not have multiple and embedded foci *not immediately dominated* amounts to the same as *not dominated*, i.e. the Foc-marked phrase is the outmost F-marked phrase (see Schwarzschild 1999:170f for examples where the difference becomes relevant). (38) is necessary to force an accent on some F-marked constituent within the focus. Note that the two constraints introduced in the last section only referred to abstract F-making and not to accent. Thus only FOC together with the *Basic F-Rule* (see section 3.1.1 above) manifests the relation between accent and F-marking.[17]

The second constraint HEADARG is motivated by the observation that within broad focus nuclear stress rather falls on the argument than on the head of a phrase. It thus corresponds to the structural stress rule NSR introduced in section 2. This asymmetry does not only hold for English, but also for other West Germanic and Romance languages:

(40)   {What about the boys? What did they do?}
      a.   English: Fred ate the BEANS.
      b.   German: Fred hat die BOHNEN gegessen.
      c.   Dutch: Fred heeft de BONEN opgegeten.
      d.   Catalan: El Pere es va menjar els FESOLS.

The examples (except for German) which are taken from Vallduví & Engdahl (1996) demonstrate that within VP focus all languages, English, German, Dutch and Catalan stress the argument (Eng.:

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[17] In so-called all-Given cases where GIVENNESS doesn't require any constituent within a focus to be F-marked, FOC even necessitates F-marking of one constituent in order to allow it to be accented. Consider example (i) from Schwarzschild (1999:172f):

(i)   { the rising of the TIDES depends upon the MOON being full, and }
    [the BOAT$_F$ being empty$_F$]$_F$ depends upon [the rising of the TIDES$_F$]$_F$

In this example, the second NP has to be F-marked because it has switched from subject to object position: the VP *depends upon Y* is Given, but *depends upon the rising of the tides* is not. Since its F-marking is not immediately dominated by another F-marking, FOC requires an accent within the NP. However, all constituents within the NP *are* Given, thus no constituent needs to be F-marked which again is a necessary condition for stress. But due to the fact that FOC is higher ranked than AVOIDF, in order to satisfy FOC one item within the NP will be stressed. According to the *Basic F-rule* which requires stressed items to be F-marked, it will therefore be F-marked, too. The exact placement of nuclear stress is determined by HEADARG (see next paragraph) which favors accent on *tides*: [the rising of the TIDES$_F$]$_{Foc}$.

beans) instead of the verb. Accent placement within head-argument structures can not be decided by F-marking (and therefore by the three remaining constraints) if both, head and argument are F-marked or both are Given (see footnote 17). Look at example (41) again which illustrates the former case:

(41)   {What did Mary do?}
        a. #She [PRAISED$_F$ John$_F$]$_{Foc}$
        b. She [praised$_F$ JOHN$_F$]$_{Foc}$

Praised and *John* are both not Given and therefore have to be F-marked according to GIVENNESS. Since the VP is FOC-marked, by FOC it has to contain an accent. Thus (41a) with stress on *praised* as well as (41b) with stress on *John* satisfy the two constraints. Since they both have three constituents F-marked, too, for the constraints GIVENNESS, FOC and AVOIDF they are not distinguishable and none of them is more optimal than the other. However, only (41b) should count as a felicitous answer. Thus we need another constraint for making the decision, HEADARG, which favors putting stress on arguments to putting stress on heads. (41b) satisfies HEADARG in contrast to (41a) and therefore wins the competition.

Like AVOIDF, HEADARG is a violable constraint, as can be seen in English, where we assume the ranking AVOIDF ≫ HEADARG. In example (42) for instance, candidate (42b) with less F-markings is chosen, although it violates HEADARG, whereas (42a) abides by it:

(42)   {What did John's mother do?}
        a. #She [praised$_F$ HIM$_F$]$_{Foc}$
        b. She [PRAISED$_F$ him]$_{Foc}$

The relative ranking of AVOIDF and HEADARG will become significant in our implementation in the next section, since it determines whether a language prefers to *deaccent* Given arguments (with a higher ranked AVOIDF) as in the example above or to keep the canonical stress pattern (with HEADARG higher ranked) as it is observed in many Romance languages.

In this section I have introduced and motivated the constraints used in Schwarzschild's account and I have explained how Givenness of constituents can be calculated in his framework. In the following section, the theory will be modified and tested on its potential to account for cross-linguistic examples and whether reranking of constraints can predict the right position of nuclear stress not only for English, but also for languages which are more restricted in accent placement.

3.2   Extending Schwarzschild: cross-linguistic examples

3.2.1   Cross-linguistic differences in the realization of focus

Languages differ in their means and strategies to mark the information structure of a sentence. While English and most Germanic languages mainly use intonation, in many Romance languages, information structure is realized mainly by syntax while intonation plays a secondary role (cf. Vall-duví & Engdahl 1996). A third type of languages which moves focal parts in a designated focus position as e.g. Hungarian will not be discussed here. In English, nuclear stress can be assigned relatively freely to constituents within the sentence. Other languages like Catalan or Italian are much more restricted and have a strong tendency to put accent at the end of the core clause, while syntactic means may be used to move interfering material away from this position.

Now I introduce four variants Romance languages use to realize information structure: non-deaccenting, dislocation, cliticization and accent shift in corrections. For each phenomenon, I explain and illustrate the used mechanism by cross-linguistic examples. Then I apply the Givenness theory to some representative examples, motivate constraint rankings and test whether they account for the cross-linguistic variations.

As we will see, the reranking proposed by Schwarzschild to account for non-deaccenting languages predicts accent patterns of the first two types of examples correctly without further conditions. In order to account for cliticization, strong syntactic assumptions are necessary. For corrections, however, wrong intonation contour and focus are predicted.

3.2.2   Deaccenting vs. non-deaccenting

First, we consider examples with broad focus. We assume that within broad focus there is some default location for the nuclear accent. In section 3.1.3 I motivated the introduction of HEADARG with the generally observed tendency in languages to stress arguments rather than their heads. However, as we saw in the discussion of English above, some languages may shift the accent away from the argument and to the head when the argument counts as Given. Examples for English, Dutch and German are given below with an un-deaccented counter part in brackets. Examples (43a,b) are taken from Ladd (1996). The explanation of deaccenting here is based on the assumption that indefinite pronouns or 'semantically empty' words count as given (cf. Ladd 1996 : 179ff).

(43)   a.   English: They've DISCOVERED something. (vs. They've discovered the DRUGS.)
       b.   Dutch: Ze hebben iets GEVONDEN. (vs. Ze hebben de DRUGS gevonden.)
       c.   German: Sie haben etwas GEFUNDEN. (vs. Sie haben die DROGEN gefunden.)

Not all languages allow deaccenting of Given items, though. In Romance languages, if we apply the same notion of Givenness, Given arguments may still bear nuclear stress. Below I give some contrasting examples for English (a) and Romance languages (b) where in (44) and (45) items are Given due to their appearance in the preceding context, while in (46) again an indefinite pronoun is the item in question.

(44)   a.   English: We'll see what you HAVE and what you DON'T have.
       b.   Romanian: . . . o   sa vedem ce   AVETI   si   ce   nu AVETI
            lit: . . . we will see   what you.have and what not you.have
            (Ladd 1996 : 176)

(45)   a.   English: The old people at the hospital looked horrible. Especially the old MEN.
       b.   Catalan: Els vells de l'hospital   feien   pena. Sobretot els homes VELLS.
            lit: The old   at the.hospital 3p-impf-make pity. especially the men   old.
            (Vallduví & Engdahl 1996 : 39)

(46)   a.   English: I HEARD someone.
       b.   Italian: Ho   sentito   QUALCUNO.
            lit: have 1p-heard someone
            (Ladd 1996 : 180)

In all the examples above, while in English Given items are deaccented, in the Romance equivalents nuclear stress remains on the final item of the intonational phrase, even though it is Given.

Let us see now how Schwarzschild suggests to account for these differences. We take the last example (46) for the further discussion as a representative of sentences of this type. For English, as we saw in the previous section, a constraint ranking is assumed in which AVOIDF outranks HEADARG, i.e. F-marking a phrase is worse than accenting a head instead of its argument.

(47)   Constraint ranking for English:
         GIVEN ≫ FOC ≫ AVOIDF ≫ HEADARG

This accounts for (46a) as illustrated in (48).

(48)   English

	{What happened?}	GIVEN	FOC	AVOIDF	HEADARG
	a. [I [heard$_F$ SOMEONE$_F$]$_F$]$_F$			!****	
	b. [I [heard$_F$ someone]$_F$]$_F$		!*	***	
☞	c. [I [HEARD$_F$ someone]$_F$]$_F$			***	*

Candidate (a) with F-marking of each constituent except the given 1st person pronoun violates AVOIDF four times, whereas in the other candidates *someone* is not F-marked resulting in fewer violations of the constraint. Since given constituents don't have to be F-marked, (b) and (c) don't violate the GIVEN constraint, either, and are with fewer F-markings therefore better off. However, (b) which doesn't contain any stress violates FOC, which requires the outmost F-marked constituent to contain stress. The deaccenting candidate (c) with stress on the verb violates HEADARG. However, since for English HEADARG is lower ranked than AVOIDF, (c) wins against (a) and remains therefore as the optimal candidate.

How do we get the right intonation contour for Romance languages? Schwarzschild (1999 : 174) notes: "the relative ranking of AVOIDF and HEADARG gives rise to deaccenting. This suggests a possible reranking of theses constraints in languages that are claimed not to deaccent". Indeed, if the two constraints are reversed in the hierarchy with the other two remaining in their position, the non deaccenting candidate (a) with stress on the object becomes optimal as is shown in tableau (94).

(49)   Italian

	{What happened?}	GIVEN	FOC	HEADARG	AVOIDF
☞	a. [[Ho sentito]$_F$ QUALCUNO$_F$]$_F$				***
	b. [[Ho sentito]$_F$ qualcuno]$_F$		!*		**
	c. [[Ho SENTITO]$_F$ qualcuno]$_F$			!*	**

This is due to the fact that with this ranking a violation of HEADARG as in (c) is more severe than a higher number of F-markings as in (a).[18] Note, that for HEADARG to work properly for the cross-linguistic examples above it is crucial what counts as a head and what as its argument in the syntactic structure of the sentences. For Catalan the string order in NPs is noun-adjective (cf. Vallduví & Engdahl 1996 : 39); so if we assume a head-argument relation between noun and adjective, we can account for the Catalan example (45) as well. The result is shown in tableau (50): again, the non deaccenting candidate is optimal.

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[18]It should be noted though that the two optimal candidates for English and Italian differ in F-marking of their constituents: for English the mechanism inhibits F-marking of the object, for Italian it requires it. If F-marking is considered to represent somehow the information structure of a sentence –provided that information structure is universal– how could it differ cross-linguistically for sentences bearing the same meaning?

(50) Catalan

	{The old people at the hospital looked horrible.}	GIVEN	FOC	HEADARG	AVOIDF
☞	a. Sobretot [els homes$_F$ VELLS$_F$]$_{Foc}$				***
	b. Sobretot [els HOMES$_F$ vells]$_{Foc}$			!*	**

For these examples, where languages don't apply any syntactic or morpho-syntactic mechanisms but just refuse to deviate from the default nuclear stress position, switching the two constraints HEADARG and AVOIDF as suggested by Schwarzschild accounts for the differences in accent placement in deaccenting and non deaccenting languages.

Therefore we assume the following constraint ranking for non-deaccenting languages as Italian, Catalan etc.:

(51) Constraint ranking for non-deaccenting languages:
GIVEN ≫ Foc ≫ HEADARG ≫ AVOIDF

Now we turn to more complex examples involving operations of syntactic movement.

3.2.3 Deaccenting via dislocation

In Romance languages, the association between focus and accent is often mediated by syntax: in order to put stress on items which are not sentence final, constituents located in between usually have to be *dislocated* or *detached* from the intonational phrase (Vallduví & Engdahl 1996). Vallduvi and Engdahl (p. 16) give an example in Catalan which is repeated here as (52).

(52) a. {Then, after the lunch I laid out all gifts on the table. Oh, by the way ...}
      b. El Joan$_1$ [hi$_1$ va deixar   una NOTA t$_1$ t$_2$]$_F$, damunt la   taula$_2$.
          Joan   obj.loc 3s-pst-leave a   note   on   the table
          'Joan left a note on the table'

Assumed, *Joan* is salient in the dialogue, the context suggests a VP focus excluding the local PP *on the table*. Since Vallduvi and Engdahl assume an underlying VOS order for Romance languages, subject and indirect object have to be dislocated such that the direct object *una nota* has the position at the right end of the phrase in focus. The subject is left-detached and the indirect object is right-detached, both leaving a mark at their original location indicated by a trace with the same index. Verbal complements in Catalan bind a clitic when detached, which is attached left to the verb and has the same index as *Joan* in the example above.

An example for detachment in Italian, given by (Ladd 1996 : 179), is a sentence that was spoken to a child whose baby brother just had his bath:

(53) Adesso faccio scorrere il   TUO t$_1$, di bagnetto$_1$
     now   I.make run   the yours   of bath.DIM
     'Now i'll run your bath'

Bagnetto which is given in the context is dislocated to the right of the sentence and stress falls on the pronoun as the right edge of the focus.

Does the reversed constraint ranking which proved to be successful in the previous paragraph, also account for dislocation in Romance languages? We take the Italian example (53) for further

discussion. Look at tableau (54) for a comparison of different candidates.

(54)   Right dislocation in Italian

		GIVEN	FOC	HEADARG	AVOIDF
	a. scorrere il TUO$_F$ bagnetto			!*	*
	b. scorrere il tuo$_F$ BAGNETTO$_F$		!*		**
	c. scorrere il [tuo$_F$ BAGNETTO$_F$]$_F$				!***
☞	d. scorrere il TUO$_F$, di bagnetto				*

(a) is the deaccenting candidate. It just moves accent from the Given *bagnetto* to the left, as English would do, by this violating the now highly ranked HEADARG. Since stress falls on the F-marked pronoun, AVOIDF is violated only once. (b) avoids the HEADARG-violation by stressing the argument. In order to satisfy GIVENNESS the pronoun has to be F-marked, too, resulting in two violations of AVOIDF. However, now we have two undominated F-markings, but only the second contains accent. This causes a fatal violation of FOC. By a further F-marking of the whole NP as in (c), the violation is avoided, but it has now three violations of AVOIDF. Candidate (d) finally applies right dislocation of the Given constituent and puts stress on the rightmost item of the main clause which is the only one that is F-marked. By this strategy it avoids both unnecessary F-markings and violation of HEADARG.[19] With the first, it wins against candidate (c) with its three AVOIDF-violations. HEADARG doesn't play any role in this conflict. By avoiding the HEADARG violation it defeats the deaccenting candidate (a), thus becoming the optimal candidate. Note that for the whole evaluation the ranking of HEADARG and AVOIDF is irrelevant. Also with a lower ranked HEADARG candidate (d) would remain optimal, since in the competition between (a) and (d), where HEADARG plays a role, the candidates are equal with respect to their constraint violations except for HEADARG, and so, where ever it is located in the hierarchy, its violation would be fatal.

As we have seen, the Givenness approach can also account for syntactic mechanisms as dislocation. Interestingly, the ranking of constraints is irrelevant for selection of the right candidates for the examples we have seen above. Thus, if English would have the option to use such mechanisms, according to this theory, it would select corresponding candidates. Since it hasn't it has to use more costly ways as shifting nuclear stress from its default location thereby violating more constraints. Compared to the optimal candidates of Romance languages, according to this theory the optimal candidates of English are rather marked.[20]

3.2.4   Deaccenting via cliticization

In this section we look at examples where we have to decide whether or not nuclear stress falls on a pronoun. Consider the following example (55) where coreferential pronouns and cliticization in Italian are involved. The question indicates VP focus.

(55)   {What did John$_i$'s mother$_j$ do?}
  a.   She$_j$ PRAISED him$_i$.
  b.   Lo$_i$ ha LODATO.
        him has 3rd-PRAISED

---

[19]Syntactic movement is often taken to be not costly. Candidates with dislocated constituents didn't undergo any processes which could have caused costs but have been generated by GEN like any other candidate.

[20]See also Reinhart (1996) for an economy-based account of intonation, who comes to a similar conclusion in her comparison of English and Italian examples.

Again we have destressing in English quite analogous to example (46) above. *Him* refers to John (indicated by the index) in this example. Since coreferential pronouns count as Given they don't have to be F-marked. According to the ranking for English, candidate (b) in tableau (56) which doesn't stress the pronoun and therefore reduces violations of AVOIDF at the cost of violating HEADARG wins against (a) with stress on the object which forces it to be F-marked.

(56)   English

	{What did John$_i$'s mother do?}	GIVEN	FOC	AVOIDF	HEADARG
	a. She [[praised$_F$[HIM$_i$]$_F$]$_F$.			!***	
☞	b. She [[PRAISED]$_F$him$_i$]$_F$			**	*

This time, however, the felicitous answer in Italian, (55b), also stresses the verb. If for English we get the verb-stressed candidate due to its minimized violations of AVOIDF at the cost of a HEADARG violation, how can the corresponding verb-stressed candidate for Italian be selected where violating HEADARG is more severe than AVOIDF?

The morpho-syntactic mechanism applied in the Italian example is cliticization. Compare three possible realizations of the utterance *She praised him* in Ialian, given in (57) and (58) below:

(57)   Who did John$_i$'s mother praise?
    a.   Ha lodato LUI$_i$.
    b.   LUI$_i$, ha lodato.

(58)   What did John$_i$'s mother do?
    a.   Lo$_i$ ha LODATO.

The lexical inventory of Romance languages contains weak and strong variants of pronouns. While the strong variant is used when a pronoun is stressed, unstressed pronouns are realized by their weak variants. This can be seen in (57) where for object focus the strong form of the 3rd person pronoun, *lui*, is used, while in (58) with VP focus its weak counter part *lo* is taken. Supposed Italian is a V(O)S language as assumed by Vallduví & Engdahl (1996) among others, the canonic position of the object pronoun is post-verbal. That is one position where the strong pronoun *lui* appears as in (57a). The verb may also be right-dislocated, as we saw in the last paragraph: in this case *lui* appears in front of the verb which is separated by a comma (57b). Both variants are equally accepted by Italian speakers. Weak variants as *lo* appear as clitics. Clitics are particles which are attached to a host, in the case of Italian pronouns their position is left to the verb as in (58a).

Which of the three candidates will become optimal with the assumed ranking in context (58)? Tableau (59) shows the evaluation. The result crucially depends on whether HEADARG is satisfied or not by (59a). If we assume that cliticized pronouns like *lo* are *not* considered as syntactic arguments anymore of the verb they are attached to (cf. e.g. Sportiche 1993), the number of AVOIDF-violations is decisive. In this case the felicitous candidate (a) with the least F-markings is predicted as optimal. However, if clitics are still considered to bear an argument relation to the verb they depend on (Monachesi 1995), candidate (a) by stressing the head violates HEADARG, and the infelicitous answers (b) and (c) instead remain optimal. Tableau (59) shows the result when the first interpretation is taken with (a) as the winner. However, it should be kept in mind that selection of the felicitous candidate is based on syntactic assumptions which are discussed controversially by syntactitians.

(59)   Italian

{What did John's mother do?}	GIVEN	FOC	HEADARG	AVOIDF
☞ a. [Lo [ha LODATO]$_F$]$_F$.				**
b. [[Ha lodato]$_F$ LUI$_F$]$_F$				!***
c. [LUI$_F$, [ha lodato]$_F$]$_F$				!***
d. Ha [LODATO$_F$ lui]$_F$			!*	**

In section 6 I will propose an account of how the theory could be amended, in case Monachesi's syntactic interpretation of clitics is assumed, by adding a specific constraint sensitive to pronouns.

3.2.5 Narrow V focus

In the final section we look at some examples where an answer with narrow focus on the verb is required. Most narrow V focus examples in Italian involve cliticization as in (60b). So once clitics are explained the treatment of these examples doesn't cause further problems. However, there are at least two cases of narrow V focus in which cliticization is not applied: corrections and examples involving focus sensitive operators like *only*. Examples are given in (61) and (62), respectively.

(60)   {What did John$_i$'s mother do with him$_i$?}
   a.   She PRAISED him.
   b.   Lo   ha   LODATO.
         him has praised.3p

(61)   a.   Did you see someone?
   b.   No, ho   SENTITO$_F$ qualcuno.
         no, have heard.3p   someone

(62)   Giovanni ha solo ABBRACCIATO Maria, senza   baciarla.
        Giovanni has only embraced   Maria, without kissing.her.

Both corrections and examples like (62) will turn out to be problematic for the Givenness account. Here we just consider corrections. Examples involving focus sensitive operators will be treated in section 6.

Consider first example (60): in English and in Italian stress falls on the verb. Note that the stress pattern for both languages is the same as in (55) where we had focus on the whole VP. Thus there is an ambiguity between wide and narrow focus.[21] The candidates are evaluated against a preceding context by means of the GIVENNESS constraint, so we expect it to be decisive for the disambiguation.

Look at tableau (63) for the competition between several candidates in English.

(63)   English

{What did John$_i$'s mother do with him$_i$?}	GIVEN	FOC	AVOIDF	HEADARG
a. She [PRAISED$_F$ him]$_F$			!**	*
☞ b. She PRAISED$_F$ him.			*	*
c. She praised HIM$_F$	!*		*	
d. She praised$_F$ HIM$_F$		!*	**	

---

[21]But see footnote 6 and page 7.

Candidates (c) and (d) both observe HEADARG by putting stress on the object which therefore has to be F-marked. (c) has no F-marking of the verb; however, *praised* is not Given which results in a GIVENNESS-violation for (c). If it is F-marked as in (d) but doesn't have an accent, it obeys GIVENNESS but violates FOC, instead, which requires un-dominated F-markings to contain stress. Since GIVENNESS requires *praised* to be F-marked, putting stress on it does not cause additional violations of AVOIDF, but results in a violation of HEADARG. That is the option candidates (a) and (b) take. Since *him* is coreferent with *John*, no F-marking is required for it. The difference between (a) and (b) only consists in an additional F-marking of the VP in (a). Does GIVENNESS require it? If we replace *PRAISED* in the VP by a F-variable, we get *X'ed him*. According to Schwarzschild, the question may be semi-formalized as *John$_i$'s mother X'ed him$_i$* after which *X'ed him$_i$* counts as Given. Thus F-marking of the VP is not required and therefore (b) with the least F-markings and narrow V focus is the optimal candidate.

For Italian, analogous to example (55) above, the verb *ha lodato* has to be F-marked in order to obey GIVENNESS. In tableau (64) only candidates which don't violate GIVENNESS are shown.

(64) Italian

	{What did John$_i$'s mother do with him$_i$?}	GIVEN	FOC	HEADARG	AVOIDF
☞	a. Lo [ha LODATO]$_F$.				*
	b. [Ha lodato]$_F$ LUI$_F$		!*		**
	c. [[Ha lodato]$_F$ LUI$_F$]$_F$				!***

Take the first candidate (a): it has only the verb F-marked which also bears stress and violates AVOIDF therefore only once. Since the pronoun is cliticized, HEADARG is not violated, again, under the assumption clitics aren't syntactic arguments anymore. If the pronoun is stressed as in (b), HEADARG is satisfied, but FOC is violated since it requires an accent on the verb in this constellation. Finally, (c) F-marks the whole VP in order to include the stressed pronoun in the focus, by this obeying FOC, but at the price of another violation of AVOIDF. Again, AVOIDF is the crucial constraint for the selection of (a) as optimal.

Now we turn to example (61), rewritten here as (65), where such syntactic mechanisms are not at hand. (65b) is a correction of the utterance given in (65a). The corrected item is the verb. Therefore, again, we have a narrow V focus. In corrections Romance languages like Italian and Catalan don't change the word order of the utterance to be corrected in order to maintain parallelism (cf. Ladd 1996; Vallduví & Engdahl 1996). The felicitous answer in Italian bears stress on *sentito* as the *corrigens* as shown in (65b).

(65) a. Did you see someone?
      b. No, ho SENTITO$_F$ qualcuno.

So, in this case Italian actually does not put stress on the most embedded constituent. What is the candidate the Givenness account predicts? Tableau (66) shows the result:

(66) Italian

	{Did you see someone? }	GIVEN	FOC	HEADARG	AVOIDF
	a. No, ho sentito$_F$[QUALCUNO]$_F$		!*		**
#☞	b. No, ho [sentito$_F$[QUALCUNO]$_F$]$_F$				***
⇒	c. No, ho SENTITO$_F$ qualcuno			!*	*

(c) is the felicitous candidate (that it should have become optimal is indicated by "⇒"): it violates AVOIDF once, since nuclear accent is put on the only item which is not Given and therefore has to be F-marked. As seen in the English examples, HEADARG is violated, too. Candidate (a) satisfies HEADARG with final stress and GIVENNESS by F-marking the verb. However, since the latter doesn't bear stress, FOC is violated. By assigning broad VP focus, FOC will be satisfied as in (b). The optimization procedure does not select the felicitous candidate (c) in this case. Instead, irrespective of its high number of AVOIDF-violations, candidate (b) is selected with broad VP focus and stress on the object. For this example, the ranking HEADARG ≫ AVOIDF predicts the wrong candidate, indicated by "#" in front of the pointing finger. Either HEADARG is too strong or AVOIDF is to weak for this examples of corrections to account for. In any way, cases like this provide counter examples against Schwarzschild's suggestion to account for languages like Italian simply by switching the constraints to the ranking HEADARG ≫ AVOIDF.

3.3 Conclusion

To summarize, the Givenness approach is an elegant mechanism to account for accent patterns and deaccenting in English (and other languages with allow stress to be shifted freely). However, a reranking of the two constraints AVOIDF and HEADARG which in the original ranking are responsible for deaccenting, is problematic: it does not result in the right accent placement in all cross-linguistic examples. This is presumably due to the hybrid character of AVOIDF which is not only responsible for shifting stress but has also other important functions as determining F-marking. After a reranking it looses too much power. Therefore, while under certain syntactic assumptions, namely that cliticized pronouns loose their status of being arguments of their host, the Givenness account for cases involving cliticization (section 3.2.4 and 3.2.5), for cases of corrections with narrow V focus it wrongly predicts candidates with broad VP focus and stress on the object as optimal. For the Givenness account, corrections therefore provide counter examples to the attempt to account for Italian by a reranking of structural and pragmatic constraints.

In the next section, we try to implement the idea of reranking in another framework.

4 A bidirectional approach

Aloni et al. (2005) propose an account within Bidirectional Optimality Theory (BiOT) (Blutner 2000) to explain the relationship between nuclear accent and focus in a sentence. BiOT is a framework which integrates both the productional and the interpretational perspective. In this section I will first introduce and motivate the three constraints used in the framework and their ranking suggested for English.

Then I will extend the account for cross-linguistic variation and look at the examples introduced in the last section. After reranking, for most of them a unidirectional perspective is sufficient to account for. Narrow V focus, however, which could not be treated in the Givenness theory, requires a bidirectional approach. We introduce and define BiOT and demonstrate how the problematic example will be resolved within this framework.

4.1 Aloni, Butler and Hindsill (2005)

Aloni et al. propose a syntactic constraint which assigns a default accent to each sentence. Two higher ranked pragmatic constraints account for accent shifts.

The syntactic constraint is based on the Nuclear Stress Rule (NSR) (Chomsky & Halle 1968) in its revised variant as introduced in section 2.2. It is repeated here as (67):

(67)   **Nuclear Stress Rule (NSR):** Put accent on the most embedded constituent.

NSR corresponds with Schwarzschild's syntactic constraint HEADARG introduced in the preceding section which also determined a default stress location at the more embedded constituent in head-argument structures. NSR must be a violable constraint, as we have seen in the previous section, since there are several reasons why stress may deviate from the default position. Therefore Aloni et al. introduce a second constraint in order to account for cases of destressing:

(68)   **DESTRESS:** Destress activated, predictable, semantically empty words etc.

It comprises more or less what has been determined as Given in Schwarzschild's account. However, whereas GIVENNESS referred to constituents of any size and was related to accenting only via the mediation of F-marking and a complex interaction of constraints, DESTRESS refers to atomic constituents only and straightforwardly requires them not to be accented.

Aloni et al. propose the ranking DESTRESS ≫ NSR for English. By this the deaccenting of a corefering pronoun in (55) from last section, repeated here as (69), as well as (70a) vs. (70b) can be explained, where the verb in (70a) is predictable and therefore has to be destressed whereas in (70b) it isn't.

(69)   What did John's mother do?
         She PRAISED him.

(70)   a.   The TELEPHONE is ringing.
         b.   The telephone is GREEN.

Aloni et al. (2005 : 160f) note that DESTRESS could be split in hierarchically ranked sub-constraints. We will make use of this suggestion in section 6 below.

As the last constraint Aloni et al. (2005) introduce the Focus Set Rule (FSR). It is based on the notion of Focus Sets as introduced by Reinhart (1996):

(71) **Focus Set:** the focus set of a sentence comprises all and only subtrees (constituents) which contain the nuclear accent of S.

As an example, consider sentence (72) from Aloni et al. (2005) with its possible focus assignments (72a)–(72c) and its focus set given in (72d):

(72) Why do you rob BANKS ?
    a.   Why do you rob [$_{Obj}$ BANKS]$_F$?
    b.   Why do you [$_{VP}$ rob BANKS]$_F$?
    c.   [$_{IP}$ Why do you rob BANKS]$_F$?
    d.   *Focus set*: {IP, VP, Obj}

Other focus assignments are not possible according to (71). Based on (71), the Focus Set Rule (FSR) is then defined as follows:

(73) **Focus Set Rule (FSR):** the focus of a sentence must be in the focus set of the sentence.

By means of FSR we can now explain, for instance, why (74a) and (74b) below are felicitous answers to (a) and (b) above, respectively, while (74c) is not: it would be a proper answer to a question in the sense of "Why do you rob Banks and not anybody else?" with focus on the subject *you*.

(74) a.   Since that's where the money is.
    b.   Because I haven't learned anything else.
    c.   #Because John couldn't be bothered.

However, the subject is not part of the focus set of question (72) and therefore an answer referring to it as the focus is not felicitous.

4.2 Extending Aloni et al.: cross-linguistic examples

DESTRESS has been introduced to account for violations of the weaker NSR in English. That FSR has to be higher ranked than DESTRESS can be seen in examples like (75) where both candidates violate the latter – in (75a) *someone* is stressed which is semantically 'empty', in (75b) stress falls on *her* which is coreferential to Mary. But (75a) violating NSR wins against (75b) which obeys NSR but where the focus is not within the focus set.

(75) Did John kill Mary?
    a.   No, but [SOMEONE]$_F$ certainly killed her.
    b.   #No, but [someone]$_F$ certainly killed HER.

Thus for English, the constraint ranking is FSR ≫ DESTRESS ≫ NSR.

In order to see how the ranking has to be changed to account for Italian, consider again example (76):

(76)   {What happened?}
     a.   I HEARD someone.
     b.   Ho   sentito   QUALCUNO.
        (have 1st-heard SOMEONE)

For English, with the assumed ranking we get the right candidate as can be seen in tableau (77):

(77)   Deaccenting in English

{What happened?}	FSR	DESTRESS	NSR
a. [I heard SOMEONE]$_F$		!*	
b. [I heard someone]$_F$	!*		*
☞ c. [I HEARD someone]$_F$			*

How do we account for the Italian example? As we see in (77), the candidate without deaccenting, (a), violates DESTRESS but satisfies NSR, while all other candidates violate the latter. So, if we raise NSR in the hierarchy, as we did with the corresponding constraint HEADARG in Schwarzschild's account in the preceding section, the non-deaccenting candidate should become optimal. The following tableau shows the evaluation with a constraint ranking where NSR has been raised above DESTRESS:

(78)   No Deaccenting in Italian

{What happened?}	FSR	NSR	DESTRESS
☞ a. [Ho sentito QUALCUNO]$_F$			*
b. [Ho sentito qualcuno]$_F$	!*	*	
c. [Ho SENTITO qualcuno]$_F$		!*	

With this ranking, the felicitous candidate (a) with only a DESTRESS-violation is optimal, whereas for the destressing competitor this time the NSR-violation is fatal. Since FSR is still the highest ranked constraint, FSR-violating (b) is out in either ranking.

With the ranking proposed for Italian, FSR ≫ NSR ≫ DESTRESS, we will examine now in the following whether the examples for dislocation and cliticization used in Schwarzschild can be accounted for in the BiOT approach.

4.2.1   Dislocation

The Italian example for dislocation is repeated here as (79):

(79)   Adesso faccion scorrere il   TUO, di bagnetto
     now   I.make run   the yours, of bath.DIM

(80)   No Deaccenting in Italian

	FSR	NSR	DESTRESS
a. scorrere il [TUO]$_F$ bagnetto		!*	
b. scorrere il [tuo]$_F$ BAGNETTO	!*		*
☞ c. Adesso faccion scorrere il [TUO]$_F$, di bagnetto			

Candidate (a) puts stress on the possessive pronoun which is in focus. Since the more embedded object *bagnetto* remains without accent, NSR is violated. (b) where nuclear stress falls on *bagnetto*, violates FSR: the narrow focus on *tuo* is not in its focus set. Furthermore, it violates DESTRESS since *bagnetto*, which is salient in the context, is subject to destressing. The solution again is to move what is in between the item in focus and the end of the phrase, viz. *bagnetto*, to the right, such that the pronoun can be stressed without a violation of NSR. (c) is the candidate to take this option. We see that the violations of NSR and FSR are fatal for candidates (a) and (b), respectively, and thus (c) is optimal. As in the Givenness account, the relative ranking of NSR and DESTRESS is irrelevant for this cases.

4.2.2 Deaccenting via cliticization

Again we consider the example for VP focus from section 3, where in the felicitous answer in Italian the pronoun is cliticized:

(81)   {What did John's mother do?}
    a.   She PRAISED him.
    b.   Lo ha LODATO.
        him has 3rd-praised

As in the other account, cliticization can be accounted for provided the syntactic assumption holds that clitics like *lo* are not represented as syntactic arguments of their head anymore. Tableau (82) shows the evaluation of three candidates:

(82)   Italian

{What did John's mother do?}	FSR	NSR	DESTRESS
☞ a. [Lo ha LODATO]$_F$			
b. [Ha lodato LUI]$_F$			!*
c. [Ha LODATO lui]$_F$		!*	

(a) with the cliticized pronoun and the verb stressed wins against (b) which violates DESTRESS by putting stress on the corefering pronoun and (c) which violates NSR. In case the question indicates object focus as in (83)

(83)   {Who did John's mother praise?}
    a.   She praised HIM.
    b.   Ha lodato   LUI.
        (has 3rd-praised HIM)

the felicitous answers both in English (a) and Italian (b) do stress the object, which is correctly predicted by Aloni et al. as demonstrated in tableau (84) for English and (85) for Italian:

(84)   English

{Who did John's mother praise?}	FSR	DESTRESS	NSR
a. She PRAISED [him]$_F$	!*	*	*
☞ b. She praised [HIM]$_F$		*	

(85)   Italian

{Who did John's mother praise?}	FSR	NSR	DESTRESS
a. [Lo]$_F$ ha LODATO	!*		*
☞ b. Ha lodato [LUI]$_F$			*

Note that in this case all (terminal) constituents are subject to DESTRESS because all of them appear in the question already: *she* corefers with *John's mother*, *him* with *John*, and the verb is repeated literally. So, whatever item is chosen for nuclear stress, DESTRESS will be violated (as the asterisks in the DESTRESS-column for each candidate indicate) and can therefore not be the decisive constraint for selection of the optimal candidate.

In both languages, narrow NP focus doesn't leave a choice for accent placement since the NP here only consists of one item: if it is not the object itself which is stressed, the NP focus will not be in the focus set anymore and therefore the highly ranked FSR will be violated. This is the case with the (a) candidates where nuclear stress falls on the verbs resulting in a fatal FSR-violation. In both tableaus, the (b) candidates therefore remain optimal.

In the examples above the optimization has been applied to candidates which all had the same focus, but differed in placement of accent and word order. So, the task was to select the optimal candidate, given a certain focus determined by the context. This is a *productional* perspective, where a speaker has a certain focus in mind and is searching for the optimal realization to express this focus. However, we can also take a *perceptional* or *interpretational* perspective in which a hearer tries to find the focus intended by the speaker's utterance with respect to a context. This would amount to an evaluation of candidates which all have the same accent, but differ in their assignment of focus as in example (72) on page 29 above.

However, not always are the given constraints sufficient for such an assignment as illustrated in Aloni et al. (2005). Consider example (86) below, where stress on the verb indicates narrow V focus.

(86)   Bill only PUFFED a joint.

As can be seen in tableau (87), the constraints select three interpretations as optimal, (a) with a narrow V focus, (b) with a VP focus and (c) with an IP focus:

(87)   Hearer Perspective

	FSR	DESTRESS	NSR
☞ a. Bill only [PUFFED]$_F$ a joint			*
☞ b. Bill only [PUFFED a joint]$_F$			*
☞ c. [Bill only PUFFED a joint]$_F$			*

However, only (a) is a felicitous interpretation. In order to select (a) as optimal the speaker perspective has to be taken into account. Tableau (88) shows that for both VP and IP focus there are better candidates, namely (88b) and (88d), with less severe violations. From the fact that the speaker did not choose these candidates, the hearer can conclude that narrow V focus was intended.

(88)   Speaker Perspective

	FSR	DESTRESS	NSR
a. Bill only [PUFFED a joint]$_F$			!*
☞ b. Bill only [puffed a JOINT]$_F$			
c. [Bill only PUFFED a joint]$_F$			!*
☞ d. [Bill only puffed a JOINT]$_F$			

An approach which integrates the evaluation with respect to both perspectives is *Bidirectional Optimality Theory* which will be introduced in the next paragraph.

4.3 Bidirectional Optimality Theory (BiOT)

Bidirectional Optimality Theory (BiOT) (Blutner 2000) evaluates form/meaning pairs. We write $\langle F, M \rangle$ to refer to a pair of some form and some meaning and $\langle F', M \rangle \prec \langle F, M \rangle$ to mean that $\langle F', M \rangle$ causes less severe constraint violations than $\langle F, M \rangle$. Bidirectional optimality in its strong version[22] can then be defined as follows[23]:

(89)   *Bidirectional optimality* (strong version)
       A form/meaning pair $\langle F, M \rangle$ is bidirectionally optimal iff:
      a.   there is no distinct pair $\langle F', M \rangle$ such that $\langle F', M \rangle \prec \langle F, M \rangle$
      b.   there is no distinct pair $\langle F, M' \rangle$ such that $\langle F, M' \rangle \prec \langle F, M \rangle$

Applied to accent (as form) and focus (as meaning), a pair $\langle accent, focus \rangle$ satisfies (89a) just in case an accent is optimal with regard to a given focus, i.e. there is no prosodic realization which expresses the same focus in a way causing less severe violations. On the other hand, (89b) is satisfied only in case a focus is optimal with regard to a given accent, i.e. there is no other focus which can be expressed less costly by the same prosodic form. Condition (89a) can be taken as representing the productive perspective, whereas (89b) represents the hearer perspective.

We now consider example (65) from section 3 again, repeated here as (90), which could not be accounted for in the Givenness theory:

(90)   Did you see someone?
       No, ho SENTITO$_F$ qualcuno.

What we get from a bioptimal investigation of this sentence are the optimal pairs of accent placement and focus. We take some possible placements of nuclear accent and compare each with the set of possible foci. In tableau (91) each candidate represents such a pair:

(91)   Italian

		FSR	NSR	DESTRESS
☞	a. No, ho [SENTITO]$_F$ qualcuno		*	
	b. No, ho [sentito]$_F$ QUALCUNO	!*		*
	c. No, ho SENTITO [qualcuno]$_F$	!*	*	
	d. No, ho [SENTITO qualcuno]$_F$		!*	
☞	e. No, ho [sentito QUALCUNO]$_F$			*

Let's start with candidate (a) with accent on the verb and narrow V focus. This is the candidate that should be predicted. According to definition (89a) we have to check whether there is a candidate with the same focus but an alternative form which causes less severe constraint violations. We may argue like this: since (a) is a case of narrow V focus and the verb is stressed, it satisfies FSR trivially.

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[22]See Blutner (2000) for details on the notion of *weak* and *strong* optimality in a BiOT paradigm.

[23]Bidirectional optimaliy has been proved to be equivalent with weak Nash equilibrium in a game theoretic approach with two players where one takes the productive perspective and the other the interpretational perspective (see Rooij & Dekker 2000). A Nash equilibrium is a pair of possible actions such that for each player given the choice of the other player there is no better action for her.

However, for all alternatives, narrow V focus would not be in the focus set and therefore FSR would be violated. See candidate (b) as an example for such a case. Thus, for this direction (a) is optimal.

According to the second part of the definition (89b), we look for alternatives with the same accent but different foci, which are (c) and (d) both stressing the verb. (c) violates FSR since the object is not in the focus set of a verb stressed form and is therefore out. More interesting is candidate (d) with VP focus: it causes exactly the same violations as (a). Does our theory predict ambiguity between these two candidates? No, because (d) is blocked by an alternative candidate with the same focus but a better form, namely (e), with only a violation of DESTRESS. This however is not in accordance with definition (89a) and therefore (d) is not optimal and the ambiguity is resolved in favor of candidate (a).

4.4   Conclusion

The presented BiOT account correctly predicted the accenting for English and after switching of NSR and DESTRESS also for Italian in cases where the canonical word order is maintained or parts of the sentence are dislocated. Like in the Givenness account, when cliticization is involved the same syntactic assumptions have to be made. However, the present implementation could also account for accent placement in the narrow V focus example by its mechanism of bidirectional optimization.

5   Discussion

In the first part of this section, I give a short summary of the results of the Givenness and the BiOT approach to account for cross-linguistic examples. The second part is devoted to a structural comparison: we work out similarities and differences of the two theories and emphasize strengths and weaknesses of either approach.

5.1   Comparison of the results

Within both frameworks we can account not only for accent placement in languages like English, Dutch and German with respect to deaccenting, but after the suggested reranking also for simple cases of non-deaccenting languages like Italian and Catalan. In both approaches, the latter is achieved by switching the ranking of two constraints: the constraints responsible for default accent placement, HEADARG and NSR, respectively, are raised, while the constraints which cause deaccenting, AVOIDF and DESTRESS, respectively, are lowered.

For more complex examples, where syntactic or morpho-syntactic mechanisms such as dislocation and cliticization are applied, the correct results of both approaches depend on syntactic assumptions. While the head-argument structure for cases of dislocation is rather uncontroversial, the syntactic status clitics bear to their hosts is quite controversial and still under debate. However, both theories depend on an interpretation of clitics not being arguments of their head. This is due to the fact that in both accounts pronouns are not distinguished from other items which are subject to deaccenting. However, pronouns indeed seem to have a special status in Romance languages and behave differently. In section 6, based on Ladd (1980)'s language internal hierarchy of accentability and further cross-linguistic data, I will suggest an extension of the theories which takes part of this observations into account.

Finally, for cases of narrow V focus where in corrections Romance languages don't change word order and therefore accent may be shifted, only the BiOT account via bidirectional optimization predicts the right candidates. The Givenness account instead predicts infelicitous candidates with VP focus and no stress shift.

5.2   Comparison of the theories

Although both approaches are constraint-based, the Givenness account and the BiOT account differ in at least two aspects significantly: in their procedure of evaluation and in the strength of their predictions. As for the first point, the Givenness approach selects the optimal candidates via a unidirectional evaluation procedure. All the work is done by the mighty constraints and their complex interaction. In contrast, in the BiOT approach constraints are weaker and their interaction is much more transparent. To compensate for possibly resulting ambiguities, bidirectional reasoning is necessary.

The second aspect concerns the explanatory strength of both theories: while Schwarzschild makes predictions about which accents are optimal in which *context*, Aloni et al. predict optimal pairs of accent placement and *focus*. Since the latter don't give an explicit account of how focus is related to context, their predictions are weaker compared to Schwarzschild. In this section, we consider both aspects in more detail.

5.2.1 Procedure of evaluation: unidirectional vs. bidirectional

How is the mechanism of deaccenting realized in both theories? We recall that in the Givenness account mainly AVOIDF is responsible for moving the accent away from Given items. AVOIDF inhibits F-markings which are not required by GIVENNESS, so if there is another item within an undominated F-marked constituent which is F-marked, stress will move there, as illustrated in the by now well known example, renamed here as (92):

(92)   What did John$_i$'s mother$_j$ do?
        She$_j$ [PRAISED$_F$ him$_i$]$_F$

In the BiOT account, stress was shifted from Given items by means of DESTRESS. We assume, that HEADARG and NSR basically have the same effect, namely preferring stress on more embedded constituents. Then the fact that in Schwarzschild'a account, after switching of the constraints AVOIDF and HEADARG, some results are wrongly predicted, whereas in Aloni et al.'s account, after reversing DESTRESS and NSR, the predictions are correct, must either be attributed to differences in the two constraints AVOIDF and DESTRESS or to the bidirectional approach or to both. Let's have a look again at some tableaus.

In Schwarzschild, when Given constituents are deaccented, HEADARG doesn't play any role as in example (92) above. All the work is done by AVOIDF.

(93)   Givenness account: English

{What happened?}	GIVEN	FOC	AVOIDF	HEADARG
a. [I [heard$_F$ SOMEONE$_F$]$_F$]$_F$			!****	
☞ c. [I [HEARD$_F$ someone]$_F$]$_F$			***	*

However, after the swap in ranking, HEADARG does the job and the number of AVOIDF-violations becomes irrelevant:

(94)   Givenness account: Italian

{What happened?}	GIVEN	FOC	HEADARG	AVOIDF
☞ a. [[Ho sentito]$_F$ QUALCUNO$_F$]$_F$				***
c. [[Ho SENTITO]$_F$ qualcuno]$_F$			!*	**

This is different in the BiOT approach: here, the constraints rather work in symmetry; in the ranking for English DESTRESS is decisive, while in the reversed ranking the NSR-violation is fatal.

(95)   BiOT account: deaccenting in English

{What happened?}	FSR	DESTRESS	NSR
a. [I heard SOMEONE]$_F$		!*	
☞ c. [I HEARD someone]$_F$			*

(96)   BiOT account: no deaccenting in Italian

{What happened?}	FSR	NSR	DESTRESS
☞ a. [Ho sentito QUALCUNO]$_F$			*
c. [Ho SENTITO qualcuno]$_F$		!*	

Thus the two constraints involved seem to be more in balance. We assume that AVOIDF is intrinsically too strong to be ranked lower than HEADARG. While DESTRESS only accounts for destressing, AVOIDF does more: it also reflects in some way the information structure of a sentence or at least influences what is to be considered the focus of the sentence. That AVOIDF is too low ranked in relation to HEADARG becomes clear in the final example we have considered, in corrections with narrow V focus in Italian:

(97)   Did you see someone?
        No, ho SENTITO$_F$ qualcuno.

(98)   Givenness account: Italian

	{Did you see someone? }	GIVEN	FOC	HEADARG	AVOIDF
	a. No, ho sentito$_F$ QUALCUNO$_F$	!*			**
#☞	b. No, ho [sentito$_F$ QUALCUNO$_F$]$_F$				***
⇒	c. No, ho SENTITO$_F$ qualcuno		!*		*

AVOIDF is powerless in this case and doesn't take part in the selection: irrespective of their number of AVOIDF-violations, HEADARG excludes the felicitous candidate (c) and selects (b), the one with the wrong focus and the wrong stress pattern due to the fact that it doesn't violate HEADARG. What made the Givenness an elegant account for diverse phenomena of focus for English and languages with similar marking of information structure, namely the small number of partly multi-functial/hybrid constraints, now constitutes the difficulty to account for languages of other types: the constraints are not fine grained enough for a proper reranking. In order to account for other language types, amendments like adhoc constraints would be necessary which would destroy much of the accounts elegancy.

The BiOT account takes a different route: its constraints are either of syntactic or pragmatic nature and have clear cut functions. One result of their being less powerful is that in a unidirectional perspective, in the mapping from form to meaning ambiguities may arise as we saw in the correction examples with stress on the verb between (a) and (d):

(99)   BiOT account: Italian

		FSR	NSR	DESTRESS
☞	a. No, ho [SENTITO]$_F$ qualcuno		*	
	b. No, ho [sentito]$_F$ QUALCUNO	!*		*
	c. No, ho SENTITO [qualcuno]$_F$	!*	*	
	d. No, ho [SENTITO qualcuno]$_F$		!*	
☞	e. No, ho [sentito QUALCUNO]$_F$			*

Disambiguation was provided by taking the productive perspective in which (d) was blocked through candidate (e) with the same focus, but a 'cheaper' prosodic realization (see section 4.3 for the detailed explanation of the tableau). The bidirectional approach has two advantages: it permits weaker, unifunctional constraints which allow different rankings without excluding too many candidates. Ambiguities will be dissolved by the universal mechanism of taking into account hearer and speaker perspective. A further advantage, mentioned in Aloni et al. (2005:268), is that the bidirectional perspective provides an explanation for experimental findings in child language acquisition. As we saw in example (99) above, while the productive direction works unidirectional, interpreting sentences may require a more complex bidirectional evaluation. According to (Szendrői 2003), children seem to be able to produce focal stress correctly already at around 4 whereas their comprehension ability lags about two years behind. Hendriks (2005) among others

has proposed that children acquire bidirectional optimization strategies only at around 6;6. Our theory, which requires bidirectional optimization for comprehension tasks could therefore explain this production-perception asymmetry.

The next section contains an attempt to make Aloni et al.'s account 'stronger' by adding constraints which relate accent to context as suggested in Aloni et al. (2005 : 258) in a footnote. However, it turns out that by doing this the bidirectional approach becomes trivialized and valuable predictions with respect to language acquisition will get lost.

5.2.2 Aside: introducing context

Aloni et al. (2005) refer to Aloni & Rooij (2002) as a possible theory to base their account on. This theory follows a *structured meaning* account where "focus leads to a partition of the semantic value of an expression into a background part [. . .] and a focus part" (p. 2). The background part is represented as a presupposition of an interrogative (cf. Beaver 1995), while the focus part is added as an existential proposition.

For instance, by uttering sentence (100a), according to this theory a speaker presupposes that what is under discussion is the things John bought which could be formalized as in (100b) presupposing the question *What did John buy?* (indicated by the presupposition operator ∂):

(100)   a.   John bought [a DESK]$_F$
        b. $\partial[?x \, \text{bought}(j, x)] \land \exists x (x = d)$

In this framework, (100b) entails the standard meaning of the sentence because the domain of the quantifier is restricted by the presupposed question (cf. Aloni & Rooij 2002 for further details). According to the theory, a sentence like this is felicitous or *congruent* after a context if the presupposed question is *supported* by the context. I.e. the sentence addresses a topic which has already been raised, it does not set up a new topic. In terms of entailment, this means an interrogative $?\vec{x}\phi$ is supported by a (preceding) indicative ψ or interrogative $?\vec{x}\psi$ iff ψ or $\exists \vec{x}\psi$ *entails* its existential closure $\exists \vec{x}\phi$. This is similar to Schwarzschild's approach of calculating Givenness (cf. part (b) of definition (28) on page 16).

Thus sentence (100) above would be a felicitous answer to the question *What did John buy?* which is actually presupposed since $\exists x \, \text{bought}(j, x)$ entails itself. It would also be congruent after an indicative like *John bought a chair*: $\exists x \, \text{bought}(j, x)$ is entailed by $\text{bought}(j, ch)$; from the fact that John bought a chair we can infer that there is some x which he bought. In this case, sentence (100) constitutes a correction. However, after the assertion *John sold a desk* or the question *What did John do with a desk?* which could be rendered as $\text{sold}(j, d)$ or $\exists X \, X(j, d)$ respectively, the intonation structure of answer (100) would not be felicitous, since both contexts do not entail the presupposed question $\exists x \, \text{bought}(j, x)$. Instead, an answer with narrow focus on the verb like *John BOUGHT a desk* with the presupposed question $\exists X \, X(j, d)$ would be felicitous.

Given this presuppositional theory of focus, we can reformulate part of Schwarzschild's Givenness in terms of the standard OT constraint *ACC (Blutner 2000):

(101)   *Avoid Accommodation* (*ACC)

This constraint is violated whenever a question presupposed by a focus is not supported by the context.

According to the notion of *support* above, questions which do not raise new topics are supported. However, here we may encounter a problem with *overfocused* sentences: an answer with wide focus would be supported after a question requiring narrow focus. For instance, *John [bought a DESK]$_F$* would be supported after the question *What did John do with a desk?* since $\exists X \, X(j,d)$ entails $\exists Y \, Y(j)$. Here another constraint comes into play which "will prevent us from placing more material into focus than is strictly necessary to allow the context to support the focal presupposition of the sentence" (p. 8) .

(102)   **AVOIDF** : don't put anything into focus.

Suppose now to add (101) and (102) to Aloni et al.'s BiOT theory with AVOIDF lower ranked than *ACC and higher than NSR. We take our narrow V focus example to check which effect the integration of the two new constraints *ACC and AVOIDF has. (103) shows the result. The candidates are still ⟨focus, accent⟩-pairs. Since *ACC is context dependent, the candidates need to be validated with respect to context. The context, indicating narrow V focus, is given on the left of the upper line in the tableau.

(103)   English

	{What did Bill do with a joint?}	FSR	*ACC	AVOIDF	DESTRESS	NSR
☞	a. Bill only [PUFFED]$_F$ a joint			*		*
	b. Bill only [PUFFED a joint]$_F$			!**		*
	c. Bill only [puffed a JOINT]$_F$			!**	*	
	d. Bill only puffed [a JOINT]$_F$		!*	*	*	

The evaluation results in (a) as optimal. However, we gain the same result as in the Givenness approach but with five constraints instead of four. Furthermore, the integration of *ACC and AVOIDF in the constraint set trivializes the bidirectional OT approach with respect to the hearer/interpretational perspective: if the context is fixed, no ambiguities arise with respect to the scope of the focus, which is determined by the context. In the original bidirectional approach though, as we saw in the previous section, when an utterance is perceived with a certain intonation contour, ambiguities may arise which can be resolved by bidirectional evaluation.

An interesting question is whether ⟨context, accent⟩-pairs are compatible with a bidirectional approach. We take the two answers in (104) with accent on the verb in (104A) and on the object in (104B), respectively, and combine them with several contexts represented by *wh*-questions. The resulting pairs are given in tableau (105) with the answers indicated by A and B.

(104)   A.   {Bill only PUFFED a joint}
         B.   {Bill only puffed a JOINT}

(105)   ⟨context, accent⟩ pairs

		FSR	*ACC	AVOIDF	DESTRESS	NSR
☞	a. ⟨What did Bill do with a joint?, A⟩			*		*
	b. ⟨What did Bill do?, A⟩			!**		*
☞	c. ⟨What did Bill only puff?, B⟩			*		
	d. ⟨What did Bill do?, B⟩			!**		
	e. ⟨What happened?, B⟩			!****		

In the tableau, *ACC and AVOIDF are calculated by assuming the focus with the minimal number

of violations compatible with the context.

The result is not satisfactory, though. Given the current constraints and their assumed ranking, due to AVOIDF always pairs in which the utterance is assigned narrow focus win. This is of course not the desired result since e.g. (B) is a felicitous intonational realization of an answer to any of the three questions *What happened?, What did Bill do?* and *What did Bill only puff?* and therefore all three foci, i.e. the pairs (c-d) should be equally fine.

For economy reasons it seems good to do without an intermediate level of focus. This is the approach taken in Schwarzschild (1999). We have tried to implement this in our BiOT approach but without much success. Maybe different constraints should have been assumed, but to explore this must be left to another occasion.

In the following section however, we will see that an intermediate notion of focus might be necessary for independent reasons.

5.2.3 ⟨context, accent⟩ vs. ⟨focus, accent⟩

In the Givenness account, accent patterns are predicted with respect to *context* with focus more or less being a byproduct, while the BiOT account predicts which accent is optimal within which *focus*. As for the relation between context and focus the theory stays agnostic.

By making focus solely dependent on context, Schwarzschild's theory becomes what is called a *pragmatic* or *strong* theory (Beaver et al. 2004). It is strong in the sense that it doesn't have to refer to lexical information in order to determine focus (although it uses syntactic information in calculating Givenness of constituents) like so-called *weak* theories (Rooth 1992). In section 2, we distinguished *semantic* and *pragmatic* foci. Semantic foci are associated with focus sensitive particles like e.g. *only* or *even* and are sometimes considered to be *bound* by the particle. In this case, they will be interpreted sentence-internally and are 'invisible' for the context.

Pragmatic foci, on the other hand, are determined by the surrounding discourse. Schwarzschild in another paper from 1997 denies the existence of purely semantic foci (Schwarzschild 1997: 13). For him, in cases where context doesn't necessitate focus, even after a focus sensitive particle, focus doesn't exist. As a confirmation of this kind of view the so-called *second occurrence focus* (SOF) as a semantic focus is sometimes taken. (106) gives a classic example by Partee (1991):

(106)   a.   Eva only gave xerox copies to the [graduate students]$_F$.
           b.   No, [PETR]$_F$ only gave xerox copies to [graduate students]$_{SOF}$.

In (106a), *graduate students* is the focus of only. In (106b), *Petr* as the correcting item is the focus, while the focus of only, *graduate students*, due to its second occurrence is called a *second occurrence focus.* Pragmaticists now argue, that sentences like (106b) can felicitously be uttered without the SOF being phonetically marked (Schwarzschild 1997, Partee 1991). However, according to FOC in Schwarzschild's account, if a SOF would be F-marked, it would be required to contain an accent. Since there is no accent, it cannot be F-marked and is therefore no focus.

However, as Beaver et al. (2004) have shown for English and Féry & Samek-Lodovici (2006) for German, SOFi *are* phonetically marked.[24] Furthermore, as already mentioned in Schwarzschild (1997) for Dutch, some languages don't allow weak pronouns in SOF positions. In (107) below we give two answers in Italian for (the slightly modified) example (106) above. Only (107a) with the strong pronoun *lui* in SOF position is felicitous, while the (107b) with the cliticized pronoun is not

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[24]albeit not always by a pitch accent, but by lengthening of syllables.

acceptable:

(107)   Eva only gave xerox copies to the GRADUATE STUDENT.
  a.   No, PETR ha solo dato le fotocopie a lui.
  b. #No, PETR gli ha solo dato le fotocopie.

This constitutes a problem for a pragmatic theory as the Givenness account. As shown in tableau (108) below, with the ranking suggested for Italian, the theory predicts the infelicitous candidate (b) with the weak pronoun as optimal.

(108)   Italian

{(107) }	GIVEN	FOC	HEADARG	AVOIDF
a. No, PETR$_F$ ha solo dato le fotocopie a LUI$_F$				!**
#☞ b. No, PETR$_F$ gli ha solo dato le fotocopie				*

This is due to the fact that AVOIDF inhibits 'unnecessary' F-markings as the one on the corefering and therefore Given pronoun. HEADARG doesn't save the felicitous candidate (a) in this case since subject and VP are not in head-arguement relation such that stressing *Petr* while leaving the VP without stress would violate HEADARG fatally.

In contrast, a theory which stays agnostic with respect to the context-focus relation and just predicts accent placement within the focus as our BiOT account could in principle be extended to treat both, semantic and pragmatic foci as well.

6 A speculative proposal

In both approaches I have examined, several phenomena of deaccenting have been subsumed under one concept and been treated with a single mechanism. In the Givenness approach, GIVENNESS determined what could remain un-F-marked due to former appearance, coreferential relation (pronouns, definite descriptions) or due to lexical relations like hyperonymy etc. (Schwarzschild 1999 : 6). Those items usually remained unstressed. In the BiOT account of Aloni et al. (2005), a single constraint DESTRESS was responsible to account for deaccenting of items for diverse reasons such as low 'semantic weigh', coreferentiality or predictability etc. (Aloni et al. 2005 : 230). However, Aloni et al. suggest "replacing DESTRESS with a family of constraints with an internal hierarchy which may vary cross-linguistically" (p. 230f).

In this section I will present cross-linguistic and language-internal data which provides evidence that certain phenomena of deaccenting can indeed only be treated by mechanism which allow to distinguish cases of deaccenting. First, I will reexamine the treatment of cliticization which in sections 3 and 4 was based on controversially discussed syntactic assumptions. Assuming, the presupposed condition does not hold, I will show that a proper treatment of cross-linguistic data is only possible by treating pronouns as a special class of subjects to deaccenting. In the second part, I examine English examples mostly from Ladd (1980), which provide further evidence that also within one language a single mechanism for deaccenting is not sufficient and several cases have to be distinguished.

6.1 Reexamining clitics: cross-linguistic confirmation

In sections 3 and 4 we noted, that the proper treatment of clitics in both approaches depends on an interpretation of clitics not being arguments of their head. However, suppose this assumption does not hold: is it possible to adapt the approaches? And how? In the following we see that a constraint specific to destressing of pronouns (which may be a sub-constraint of DESTRESS in the BiOT approach) can provide us with an account of clitics which does not rely on dubious syntactic assumptions. We first consider the Givenness approach and turn to the BiOT account afterwards.

Remember the situation described in section 3: there we have considered the following dialog, here repeated as (109), where the felicitous answer in Italian was (109a) with a clitizized pronoun and stress on the verb:

(109) {What did John$_i$'s mother$_j$ do?}
  a.   Lo$_i$ ha LODATO.
  b. #Ha lodato LUI$_i$.

Although it stressed the pronoun as the argument and thereby avoided a HEADARG violation, (109b) had not been selected:

(110) Italian

	{What did John's mother do?}	GIVEN	FOC	HEADARG	AVOIDF
☞	a. [Lo [ha LODATO]$_F$]$_F$.			?	**
	b. [[Ha lodato]$_F$ LUI$_F$]$_F$				!***

This was due to the fact that we interpreted the cliticized pronoun *lo* as losing its status as an argument such that (a) was not violating HEADARG and AVOIDF became decisive. Now, suppose

clitics like *lo* remain to be arguments: how could cliticization than be accounted for in the theory?

One way of accounting for cliticization in Romance languages would be to say that clitics like *lo* are destressed counterparts of strong pronouns like *lui* (cf. Calabrese 1986). We could think then of cliticization as the result of a destress constraint specific for pronouns:

(111)   **DESPRO** : destress given pronouns

Now, with a ranking of DESPRO above HEADARG the felicitous answer (a) which violates HEADARG and would therefore lose the competition, will become selected as shown in tableau (112):

(112)   Italian

	{What did John's mother do?}	GIVEN	FOC	DESPRO	HEADARG	AVOIDF
☞	a. [Lo [ha LODATO]$_F$]$_F$.				*	**
	b. [[Ha lodato]$_F$ LUI$_F$]$_F$			!*		***

Since DESPRO is specific for pronouns, stress assignment for examples not involving pronouns will not be changed by the addition.

In this theory, though, DESPRO appears like a *constrictio ex machina*.[25] It does not really fit to the Givenness approach, since in this system pronouns do not have a special status. For English, deaccenting of pronouns is achieved by the same mechanism as deaccenting of any other words, viz. by interaction of the structural HEADARG and the hybrid constraint AVOIDF. However, pronouns seem to require a special treatment in some languages as we have seen above.

On the first view, the situation is similar in the BiOT account of Aloni et al.: NSR, the structural constraint corresponding to HEADARG in the Givenness account, is higher ranked for Italian than a pragmatic constraint, DESTRESS, which is responsible for deaccenting. Thus, candidates with stress on the argument are preferred. In contrast to the former approach though, a constraint like DESPRO for destressing coreferential pronouns can be integrated in the constraint set straightforwardly as a subcontraint of DESTRESS. If the former is higher ranked than NSR, as tableau (113) shows, the candidate with the cliticized pronoun will become optimal, because (b) and (c) are violating DESPRO. Provisionally, we call DESTRESS minus DESPRO DESELSE: its position remains below NSR for Italian.

(113)   Italian

	{What did John's mother do?}	FSR	DESPRO	NSR	DESELSE
☞	a. [Lo ha LODATO]$_F$			*	
	b. [Ha lodato LUI]$_F$		!*		
	c. [LUI, ha lodato]$_F$		!*		

For English which doesn't have the option of changing word order, stress is shifted from the pronoun left to the verb as in (a) in order to avoid violation of DESPRO:

(114)   English

	{What did John's mother do?}	FSR	DESPRO	DESELSE	NSR
☞	a. [She PRAISED him]$_F$				*
	b. [She praised HIM]$_F$		!*		

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[25]A remark by the reviewer Bernhard Fisseni

DESPRO has to be ranked above NSR for English as can be seen in tableau (114). However, nothing has been said yet about the relative ranking of DESPRO and DESELSE. There might even be parts of DESELSE which are lower ranked than NSR for English. Some clarification will be provided in the next section.

6.2   Further evidence: language-internal examples

In the last section, I will examine English examples mostly from Ladd (1980), which provide further evidence for the necessity of distinguishing different cases of destress. Ladd suggests a hierarchy of accentability which may provide hints for a possible ranking of sub-constraints responsible for destressing. We will look at examples which involve different phenomena of deaccenting simultaneously. As it seems, since there is only one nuclear accent, strategies are overridden by each other – a fact which can not be accounted for by using just a single constraint for destressing as in our BiOT account or with a uniform account based on Givenness as suggested by Schwarzschild (1999).

Ladd (1980 : 85) suggests a hierarchy of accentability. Earlier accounts were based on a dichotomy between accentable content words and unaccentable function words (e.g. Chomsky & Halle 1968). Accenting the rightmost content word works for many examples in English and explains the stress pattern of sentences like

(115)   I'm leaving for CRETE tomorrow.

where stress falls on *Crete* as the rightmost content word whereas *tomorrow* remains unstressed. However, sentences with subject and intransitive predicate (116a) and *wh*-questions ending with a verb (116b) show that the distinction between content words and function words is not sufficient to account for accent placement in all cases:

(116)   a.   My PARENTS called.
         b.   How many LANGUAGES do you speak?

These examples could be explained by assuming an internal hierarchy of content words, namely that nouns are rather accented than verbs. Accentability should therefore not be described as an absolute property, but as "relative within a focus constituent" (Ladd 1980 : 86).

Deaccenting can then be seen as "lowering the degree of accentability of an item" (p. 87). By this we can account for the fact why in (117) stress on the verb does not signal narrow focus:

(117)   Has John$_i$ read Slaughterhouse-Five?
         No, he$_i$ [doesn't READ books]$_F$.

Although *book* is the rightmost content word, since its accentability is weakened by the fact that a hyperonym has been used in the preceding context, according to Ladd stress moves to the item with the next highest degree of accentability within the focus constituent. Note though, that also the verb appears in the context and should therefore be weakened with regard to its accentability.

Does the current ranking of our BiOT account predict the intonation contour of the answer suggested in Ladd (1980) as felicitous? In (117) we have the situation that three items are subject to destress, but for slightly different reasons: the pronoun is given since it is coreferent with *John*, the verb *read* is given in the question directly, and *books* is given according to the mention of the hyperonym *Slaughterhouse-Five* before. If we use only one destress constraint for all three cases,

does the ranking predict the correct result?

(118) BiOT account

{Did John read Slaughterhouse-Five?}	FSR	DESTRESS	NSR
a. He doesn't READ books.		!*	*
b. He doesn't read BOOKS.		!*	
☞? c. He DOESN'T read books.			**

As can be seen in tableau (118), (a) destresses *books* by shifting stress left to the verb. Thereby it violates NSR and also DESTRESS once because of stressing *read*. Candidate (b) obeys NSR by stressing the object *book*, but thereby violates destress once as well. (c) however, shifts stress even further left to the auxiliary, violating NSR twice. But DESTRESS is obeyed in general. Since it is ranked above NSR, (c) becomes optimal.

Ignoring (c) for the moment, why should (a) be favored above (b), as suggested by Ladd? In this case, either not destressing in the hyperonym case should be worse than not destressing a repeated item, or not destressing a noun should be worse than not destressing a verb.

However, consider what an answer like (119a) might presuppose:

(119) Did John read Slaughterhouse-Five?
    a. No, he doesn't read BOOKS.
    b. No, he doesn't READ books.

It suggests that the speaker thinks *Slaughterhouse-Five* is not a book. That *books* refers to different kinds of entities than *Slaughterhouse-Five*. Compare this with a famous example by Lackoff (1971):

(120) John called BILL a REPUBLICAN, and then HE insulted HIM.

Similar in this example, stressing the pronouns suggests that they do not refer to the expected discourse referents anymore, that *he* now refers to *Bill* instead of *John*, while *him* refers to *John*, not to *Bill*. Stress on the NPs in these examples indicates that the canonical anaphoric relation is not valid anymore. This strong effect might be taken as the reason for NPs to be rather destressed than verbs.

We might clarify the hierarchy by looking at an example which only has repeated items to be destressed:

(121) Did John read Slaughterhouse-Five?
    No, John DIDN'T read Slaughterhouse-Five.

Here obviously nuclear stress falls on the auxiliary. We might argue that in (121) there is narrow focus on the negated auxiliary, for the fact (121) being a yes-no question. In this case, since the rest of the VP is not in the focus set, the highly ranked FSR would be violated by putting stress on any of its constituents except the auxiliary:

(122) Did John read Slaughterhouse-Five?
    a. No, John [DIDN'T]$_F$ read Slaughterhouse-Five.
    b. #No, John [didn't]$_F$ READ Slaughterhouse-Five.
    c. #No, John [didn't]$_F$ read SLAUGHTERHOUSE-FIVE.

The hierarchy of accentability can be further specified:

destress locatives   Locative PPs are destressed:

(123)   [There is a FLY in my soup]$_F$

This is in accordance with Selkirk (1995 : 558) where focus projection is not possible from adjunct phrases in post-head position as e.g. in *He smoked [in the TENT*]$_F$. I.e. in order to indicate all-sentence focus nuclear stress cannot have a position within a (optional) PP. If the PP is an argument though, as e.g. in *[He only [looked [at the GARDEN*]$_F$]$_F$]$_F$, focus may project.

Indefinite NPs > definite NPs   Indefinite NPs are more likely to be accented than definite NPs, as can be seen when we compare the following example (124) with sentence (123) above :

(124)   [I left my car in a TOW zone]$_F$

Although a noun in the PP is stressed all-focus is still possible.[26]

6.3   Conclusion

Even though the material presented in the last two sections needs further investigation, it should have been sufficient to show that a proper treatment of different phenomena of deaccenting requires further constraints in both the Givenness and the BiOT approach. However, in the latter splitting the constraint DESTRESS in several specific sub-constraints as suggested in Aloni et al. could provide a natural solution to the problems. In the Givenness approach instead, ad hoc constraints have to be added which seem to contradict the uniform approach towards deaccenting taken in Schwarzschild (1999). Again, Aloni et al.'s BiOT approach proves to be more flexible – not only in its account for cross-linguistic phenomena as shown in the previous sections, but also for language-internal variations.

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[26]Note that for Ladd this is an example of (not so obvious) deaccenting, too (cf. Ladd 1980 : 94). In the hierarchy PPs are lower than main clauses, but the fact that there is an indefinite NP in the PP and a definite NP in the main clause (and perhaps other reasons wrt informativeness) causes stress to shift right. Here Kadmon (2001 : 275f)'s criticism of Ladd's approach, namely that deaccenting is *distinguished* from the relative hierarchy of accentability, becomes understandable since it is not so clear what has to be attributed to what. Kadmon favors a unifying approach based on "relative 'importance' or 'expectation'" and "structural considerations" (p. 276).

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