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The Accentuation of German Imperative Sentences*

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1. Introduction

1.1. Overview

German sentence prosody has been a focus of accentologists' attention since the publication of Bierwisch's (1966) comprehensive paper, and various attempts at clarifying factors determining prosodic shapes of German sentences have been made from various standpoints. Representative studies on German sentence prosody include Bierwisch (1966; 1968), Kiparsky (1966), Fuchs (1976), Schmerling (1976), Lötscher (1983; 1985), Selkirk (1984), Jacobs (1988), Uhmann (1988; 1991), and Cinque (1993), among others. Particularly noteworthy among them is Lötscher (1983), who, in a functional perspective, adduced a lot of facts about prosodic patterns of various sentence types, most of which had until then been unknown. In fact, some kinds of facts he adduced assume considerable theoretical importance to generative-phonological investigation of sentence prosody. One of such cases is the accentuation of German imperative sentences, which has not been reanalyzed in the generative-phonological framework. In this paper, therefore, I will attempt to reanalyze facts about the accentuation of German imperative sentences in a generative-phonological perspective, and to demonstrate that their surface prosodic patterns are derived from interactions of a set of rules which account not only for the accentuation of imperatives but also for that of other types of sentences.

This paper is organized as follows. Section 2, which is devoted to a descriptive task, poses problems to be resolved. Section 3, which is the heart of this paper, presents arguments for syntax-based solutions to the problems and proposes a new phonological-syntactic correspondence rule for German phonological phrase formation. Section 4 demonstrates that the correspondence rule is not ad hoc in that it is able to account for a wide range of facts about German sentence accent assignment. Section 5 is concerned with a refinement and an articulation of the theory of sentence accent assignment sketched in section 3. What is at issue there is the relation between the restructuring of phonological phrases, the relation between phonological phrasing and the Strict Layer Hypothesis, and the relation between phonological phrasing and semantic informa-

tion. Finally, section 6 presents critiques of Cinque (1993), who attempts to derive surface prosodic shapes of German sentences only from syntactic structure.

1.2. Basic Notions

Before turning to the main part of this paper, however, I will briefly introduce notions on which the description in this paper is essentially based. The first notion to be introduced is the "focus". This notion is defined in various ways from various standpoints (see Gussenhoven (1984), Selkirk (1984), Bolinger (1985; 1986; 1989), and Rochemont (1986), among others). In this paper, I will define the focus as in (1) for describing relevant data.

(1) Focus: A linguistic element that has no antecedent, either explicit or implicit, in a given discourse is defined as a focus.

This definition, which is in effect equivalent to the definition of Rochemont's (1986) Presentation Focus, indicates that a linguistic element that has the status of new information, whether it bears a pitch accent or not, is defined as a focus. That is, the focus is a notion completely independent of the distribution of pitch accents and does not have a strict one-to-one correspondence with them.

The second notion to be clarified is the "focus domain", which has the following subclasses: the "broad focus domain" and the "narrow focus domain". These notions are implicitly shared among accentologists (see Ladd (1980) and Cruttenden(1986)), but are scarcely used with an explicit definition. In this paper, therefore, I will provide definitions such as those in (2), which are more explicit than any other in the accentological literature.

(2) Focus Domain: a domain of new information
   a. The broad focus domain is defined as a domain of new information wider than a single maximal projection.
   b. The narrow focus domain is defined as a domain of new information which is either as wide as, or narrower than, a single maximal projection.

To see how the definitions in (2) work, consider the following examples.

(3) a. What did John do?---John hit a man.
b. Who hit Mary?---John hit Mary.

In the answer of (3a), the VP hit a man has the status of new information, because it does not occur in the question What did John do?. Thus, the VP serves as a broad focus domain, because it is wider than a single maximal projection in that it consists of a verb and an NP. In the answer of (3b), on the other hand, only the NP John forms a focus domain. The two other words have already occurred in the question, and they are seen as old information. Since the focus domain in (3b) consists of one maximal projection, it is construed as a narrow focus domain.

The third notion to be clarified for precise description of relevant data is "neutral emotion", which is also implicitly shared among accentologists but is scarcely given a precise definition. Our definition of neutral emotion is as follows:

(4) Neutral Emotion: The speaker is said to have neutral emotion when (s)he is neither excited nor depressed.

The neutral emotion as defined in (4) is typically observed in utterances of capable TV or radio announcers who deliver news in a quite objective tone of voice without being influenced by nonverbal interrupting factors in daily conversation like hesitation. One may naturally argue against the notion of neutral emotion, aside from the appropriateness of the term (see Bolinger (1989), among others). However, the notion itself is meaningful in describing prosodic facts, because linguistically significant contrasts are observed in a minimal pair uttered with neutral emotion. One may also argue that the definition presented in (4) is vague. However, this argument does not stand, either. The definition in (4) is sufficient for the present purpose, and, in the status quo, neutral emotion cannot be defined in a strict manner.

The final notion to be noted is "nuclear accent". Here this notion is to be understood as equivalent to Chomsky and Halle's (1968) "nuclear stress" (primary stress in a phrase or a sentence), which is called by various other

names (e.g. nucleus, nuclear tone, and so forth). I use the term "accent" rather than "stress", following Bolinger's hypothesis that pitch, rather than intensity, plays a dominant role in sentence-level prosody (cf. Bolinger (1958) and Selkirk (1984), among others).

2. Problems

In his 1983 book, Andreas Lötscher points out three facts concerning the accentuation of German imperative sentences, which are repeated in (5).

(5) a. Das satzeinleitende finite Verb in Befehlssätzen erhält in neutraler Akzentuierung primären Akzent. (p. 262)
b. Sekudäre Akzentuierung auf dem satzeröffenden finiten Verb bei neutraler Akzentuierung allenfalls auf Grund einer Art rhythmischer Akzentsenkung denkbar: Diese ergibt den Effekt eines besonders emphatischen Ausdrucks eines Befehls[.] (Ibid.)
c. Daneben beobachten wir auch sekundäre, schwache Akzentuierung [auf dem satzeröffenden finiten Verb], die als Ergebnis einer thematischen Akzentuierung zu interpretieren ist. (Ibid.)

(5a) means that finite verbs in sentence-initial position of imperatives receive a nuclear accent when the imperatives are uttered with neutral emotion in a context where the verb and its object NP form a broad focus domain. Since NPs with the status of new information generally receive a nuclear accent, (5a) implies that imperatives uttered with neutral emotion in a context where the verb and its object NP form a broad focus domain have two nuclear accents. This is shown by the data in (6), adduced by Lötscher (1983: 262). (Henceforth, captitalized words mean that they receive a nucear accent.)

(6) a. SCHLIESS die TÜR! 'Close the door.'
b. WIRF die PISTOLE weg! 'Throw away the gun.'
c. GIB mir meinen BALL zurück! 'Return my ball to me.'
d. LIES den ersten ABSCHNITT! 'Read the first paragraph.'

(5b) means that the deaccenting of the finite verb in the initial position of an imperative for some rhythmic reason in a context where the whole sentence

forms a broad focus domain serves as amplifying the "power" of the imperative. That is, the phenomenon is an instance of what Bolinger (1985; 1986; 1989) calls "accents of power". Typical examples from Lötscher (1983: 262) are given below which function as emphatic versions of (6a-c).

(7) a. Schliess die TÜR!
b. Wirf die PISTOLE weg!
c. Geben Sie mir meinen BALL zurück!

(5c) means that imperative sentences with the accentless object NP and the nuclear-accented verb are interpreted as being uttered in a context where the NP is thematic, that is, has the status of old information. The following examples from Lötscher (1983: 262) illustrate the point.

(8) a. SCHLIESSEN Sie die Tür!
b. WIRF die Pistole weg!
c. GIB mir meinen Ball zurück!

Among the three kinds of facts indicated above, the third fact, which is illustrated in (8), is in parallel with its English counterpart. English imperative sentences such as (9), which have the accentless direct object NP and the accented verb, are typically appropriate when uttered with neutral emotion in a context where the NP has the status of old information.

(9) a. CLOSE the door.
b. GIVE me the shotgun.
c. READ the first paragraph.

Thus, the data in (8) are of little interest here.

Of special interest here are the first and the second facts, given in (6) and (7), respectively. The reason for being interested in these two facts is threefold. The first reason is that the facts in (6) and (7) exhibit a sharp contrast with their English counterparts. In English, imperative sentences containing a verb and a definite direct object NP, when uttered with neutral emotion in a context where the verb and the NP form a broad focus domain,

receive only one nuclear accent on the NP, as shown in (10).

(10) a. Close the DOOR.
b. Give me the SHOTGUN.
c. Read the first PARAGRAPH.

If, on the other hand, nuclear accent falls on both the verb and the object NP, as in (11), the power of an utterance is amplified. That is, the prosodic pattern is inappropriate for neutral-emotioned imperatives. It is appropriate only for imperatives uttered with amplified emotion.

(11) a. CLOSE the DOOR.
b. GIVE me the SHOTGUN.
c. READ the first PARAGRAPH.

Note here that the English and the German imperative sentences considered here superficially have the same syntactic and semantic properties. Both exhibit the verb-(object)-object word order and contain a verb denoting an action and a definite direct object NP. Thus, the following question arises especially as to the accentuation of neutral-emotioned German imperatives:

(12) Why is it that nuclear accent falls on both the verb and an object NP in an imperative sentence uttered with neutral emotion in a context where the verb and the NP form a broad focus domain?

Lötscher (1983) does not provide any satisfactory answer to this question, for he only adduces facts about the prosody of German imperatives and does not have any theoretical devices for deriving surface prosodic patterns of sentences. Nor do other studies on German sentence prosody, as far as I know, touch upon this issue.

The second reason for paying special attention to the facts in (6) and (7) is that German transitive verbs do or do not receive a nuclear accent when they are contained in a broad focus domain. The following data illustrate the point.[1]

(13) a. Warum bist du so verärgert?---Mein FREUND säuft SCHNAPPS.
'Why are you so angry?---My friend is drinking spirits.'
Cf. #Mein Freund SÄUFT SCHNAPPS.
(Uhmann (1991: 236))

b. Was gibt es Neues von dem Hause?---JOHAN KAUFT es.
'What's new about the house?---Johan is going to buy it.'

c. Was tat Johan?---Er KAUFTE ein HAUS.
'What did Johan do?---He bought a house.'

In (13a), the whole sentence, uttered with neural emotion, forms a broad focus domain, as is clear from the context, and nuclear accent falls on the subject and the object NP, not on the verb. In (13b-c), on the other hand, the verb forms a broad focus domain with either the subject or the object NP, and nuclear accent falls not only on the NP but also on the verb. These facts also illuminate the peculiarity of the accentuation of German imperatives uttered with neutral emotion in a context where a verb and its direct object NP form a broad focus domain. Here arises a further question such as (14):

(14) Why is it that the verb in an imperative sentence uttered with neutral emotion in a context where the verb is contained in a broad focus domain receives a nuclear accent, whereas the verb in a declarative sentence uttered under the same condition does or does not receive a nuclear accent?

Lötscher does not provide any answers to this question. Neither do other studies on German sentence prosody. Thus, we must also answer this question in some way or other.

The third reason for investigating the prosody of German imperatives is that German declaratives exhibit prosodic behavior parallel to their English counterparts. In particular, the accentuation of German and English declaratives are both subject to Okazaki's two generalizations about sentence accent assignment. The first generalization, which is concerned with the accentuation of NPs, is stated in (15) (Okazaki (1992a)).

(15) In a sentence uttered with neutral emotion, a specific NP within a

broad focus domain must receive a pitch accent, whereas a non-specific NP within a broad focus domain must not receive a pitch accent.

The notion of specificity in (15) is defined from the viewpoint of the speaker. That is because the placement of pitch accents is determined as the speaker, not the hearer, sees the world (see Bolinger (1985)). In particular, following Okazaki (1992a), I adopt Takeda's (1981) definition of specificity in (16).

(16) A noun phrase is specific for a person if by its use the speaker refers to a particular object or individual such that the person has it or him in mind. On the other hand, a noun phrase is nonspecific for a person if by its use the sepaker does not refer to any particular object or individual such that the person has it or him in mind. (Takeda (1981: 42))

For further details of this notion, see Okazaki (1992a) and the references cited there.

The examples in (17)-(20), all of which are uttered with neutral emotion, indicate that the generalization in (15) applies to the accentuation of NPs in German and English.[2]

(17) a. Warum kreischst du?---Es ist eine SPINNE in die Suppe gefallen.
'Why are you crying?---A spider has fallen into the soup.'

b. Was hast du zu mir gesagt?---Du sollst das AUTO auf den SCHROTTplatz fahren.
'What have you said to me?---You should drive the car to the scrap yard.'

(18) a. Es ist etwas VORSCHEIN gekommen.
'Something has appeared.'

b. Hans SUCHT jemand.
'Hans is looking for someone.'

(19) a. What is Mr. Arnold doing?---Caning a STUDENT, I guess.

b. What did Mr. Arnold do?---He caned a STUDENT.

(20) a. What is Mr. Arnold doing?---CANING some student (or other), I guess.

b. Coming back so soon?---Yep. I haven't SEEN anybody.

c. (out of the blue) I'll BUY you a drink.

In (17) and (19), the underlined NPs all have a specific referent on the part of the speaker and are, as is clear from the context, contained in a broad focus domain. In fact, they receive a nuclear accent. In (18) and (20), by contrast, none of the underlined NPs have a specific referent on the part of the speaker, and they are accentless, although they are contained in a broad focus domain. For further details of this issue, see Okazaki (1990; 1992a).

The second generalization, which is concerned with the accentuation of predicates, is stated in (21).

(21) In a sentence uttered with neutral emotion, an action-type predicate within a broad focus domain must receive a pitch accent, whereas a a nonaction-type predicate (either a state or a process predicate) must not receive a pitch accent.

The action/nonaction distinction in (21) is proposed in Nakau's (1985) tripartite theory of basic predicate types. In this theory, as in (22), state and process predicates constitute a semantic class as contrasted with action predicates.

(22) a.	STATE: BE (THING, PLACE)		(e.g. be, have, know)
b.	PROCESS: GO (THING, PLACE)	nonaction	(e.g. appear, come, go)
c.	ACTION: DO (ACTOR, THING)	action	(e.g. weep, kick, paint)

For evidence in support of the action/nonaction distinction, see Nakau (1985).

The examples in (23)-(26), which are also uttered with neutral emotion, show that the generalization in (21) governs the accentuation of verbs in both German and English.

(23) a. Ein JUNGE GEIGT.
'A young man is playing the violin.'

b. PETER KOCHT.
'Peter is cooking.'

(24) a. Was ist denn da für ein Lärm?---Ein MÜLLwagen kommt.
'What's this noise?---A dustcart is coming.'

b. Was ist passiert?---Präsident KENNEDY ist ermordet worden!
'What's happened?---President Kennedy has been assassinated!'

c. Warum ist Jimmy im Spital?---Ein LASTwagen ist ihm über den Fuss gefahren.
'Why is Jimmy in hospital?---A wagon has run over his foot.'

(25) a. What happened then?---JESUS WEPT.

b. What's this noise?---My BROTHERS are WRESTLING.

(26) a. Too bad you won't come to the party tonight.---My FATHER's coming.

b. What's happened?---President KENNEDY has been assassinated.

c. Who is that young man?---MARY knows him.

In (23) and (25), the underlined predicates, which are contained in a broad focus domain, fall under action-type predicates in the sense of Nakau (1985), and receive a nuclear accent. In (24) and (26), on the other hand, the underlined predicates, including passive predicates, are all accentless, although they are also contained in a broad focus domain. That is because they are all classified as nonaction-type predicates in Nakau's (1985) sense. For further details of this issue, see Okazaki (1991b, 1992b).

The facts in (17)-(26) amply show that German and English exhibit parallel prosodic behavior in cases other than imperatives. Thus, a question such as (27) arises as to the prosodic behavior of the imperatives consisting of a verb and a definite object NP.

(27) Why is it that German imperatives consisting of a verb and a definite object NP do not exhibit the prosodic behavior parallel to their English counterparts?

Note here that, as far as I know, no one has ever provided an answer to this question, which I believe is essential.

We have now pointed out the three reasons for investigating the accentuation of German imperatives, raising the three problems ((12), (14), and (27)). The next task is to clarify the mechanism of the accentuation of German imperatives and to provide satisfactory answers to the three questions

raised above. We will be committed to this task in the next section.

3. Solving the Problems

3.1. A Syntactic Difference between German and English

In investingating the prosodic difference between German and English imperative sentences, we should take notice of the fact that the prosodic difference under consideration is observed under the same semantic and pragmatic conditions. That is, the imperative sentences in (6) and (10), repeated below, consist of an action verb and a specific object NP, and are in fact uttered with neutral emotion in a context where the whole sentence forms a broad focus domain.

(6) a. SCHLIESS die TÜR!
b. WIRF die PISTOLE weg!
c. GIB mir meinen BALL zurück!
(10) a. Close the DOOR.
b. Give me the SHOTGUN.
c. Read the first PARAGRAPH.

It follows, then, that the prosodic difference between (6) and (10) cannot be attributed to either a semantic or a pragmatic factor.

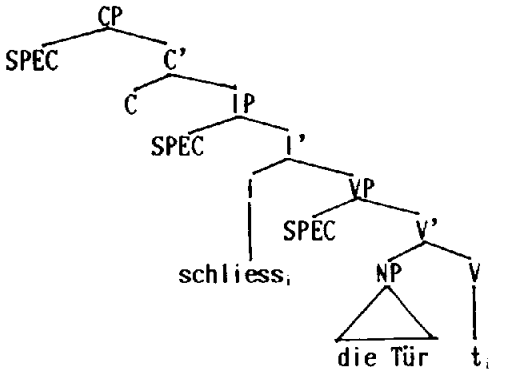
It should also be noticed that the difference between (6) and (10) is not directly derived from purely phonological factors like the syllable structure of a word, principles of eurhythmy, and so forth. That is because pitch accent assignment is not in principle influenced by the syllable structure of a word, and because the distance between a verb and an object NP varies in (6) and (10).

We are thus led to the conclusion that the prosodic difference between German and English imperative sentences should be ascribed to a syntactic difference between the two languages. The most fundamental syntactic difference between German and English is that the former is an SOV language with so called Verb Second (V2) Phenomena in root clauses, whereas the latter is an SVO language without V2. Here I further assume, following Travis (1984) and Saito, Okazaki, and Shimada (1991), that Infl precedes VP in both languages. That is, German is an SIOV language, and English, SIVO language.[3]

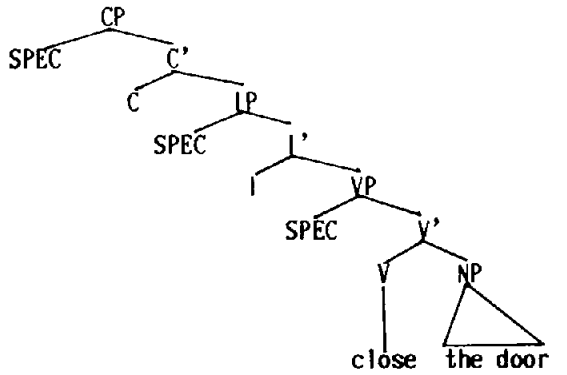
Taking (6a) and (10a) as sample cases, I will have a closer look at a

syntactic difference between German and English imperative sentences. The S-structures for (6a) and (10a) are represented as in (28) and (29), respectively.

(28)



(29)



In (28), the verb is generated within VP at D-structure, and is raised to the position of Infl. In fact, the sequence of a verb plus an object NP does not form a syntactic constituent in German.[4] In (29), by contrast, the verb does not move to the Infl-position, for, in English, only nonlexical verbs like <u>be</u>, <u>do</u>, and <u>have</u> are allowed to move to the position (cf. Pollock (1989)). Thus, in this language, the sequence of a verb plus an object NP forms a syntactic constituent at both D- and S-structure. This syntactic difference is ultimately derived from the difference between the content of the German Infl and that of the English Infl. An intuitive explanation is that the German Infl, which is "strong", attracts verbs, both lexical and nonlexical, whereas the English Infl, which is "weak", attracts only nonlexical verbs. For further details of this issue, see Travis (1984), Chomsky (1988), and Pollock (1989).

Note here that the prosodic difference under consideration is reduced to

the difference in nuclear accent assignment between German and English. Okazaki (1991a) argues that nuclear accent assignment must be seen as a pure phonological phenomenon. That is, the location of a nuclear accent is determined by a genuine phonological rule. In fact, I proposed a generalization such as (30) about nuclear accent assignemnt on the basis of English data.

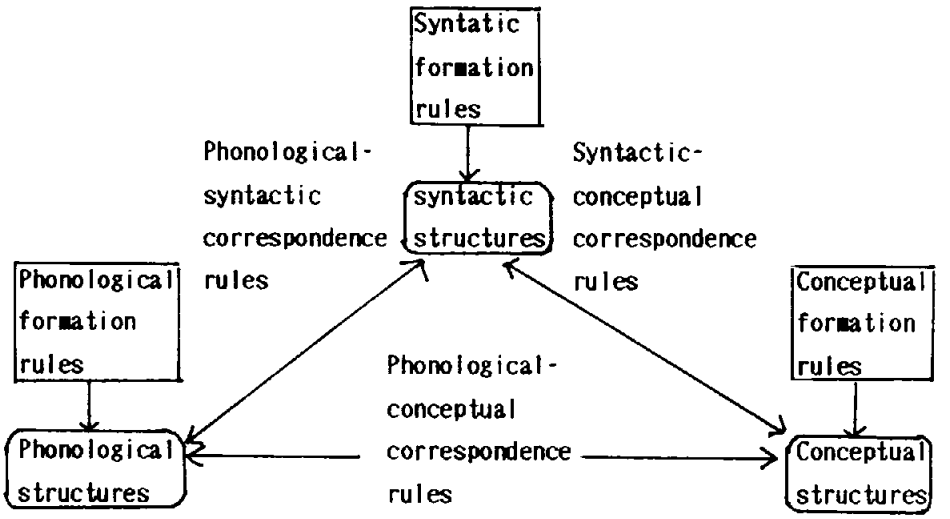
(30) The Phonological Phrase (PPh) is defined as the domain of nuclear accent assigment.

Note in passing that in (30), the PPh is to be understood as being included in the Prosodic Hierarchy postulated by prosodic phonologists like Selkirk (1986) and Hayes (1989), which comprises prosodic categories like "Utterance", "Intonational Phrase", "Phonological Phrase", "Phonological Word", and so forth.[5] If the generalization in (30) is correct, the particular grammar of German must contain a rule which derives two PPhs from S-structures like (28). The next task, then, is to formulate such a rule, together with other rules entering into the derivation of surface prosodic patterns of German sentences.

3.2. The Organization of Grammar and Rules

I assume, following Jackendoff (1990), that syntax, semantics, and phonology each constitutes an independent module. Each of them has its own rules and principles of combination. The three components are equally creative, and none is derived from the others. But each component corresponds with the two other components in a systematic manner. Thus, each component is linked with each other by correspondence rules. The organization of grammar assumed here is diagrammed as in (31).

(31) The Organization of Grammar



I also assume, following Okazaki (1991), that sentence accent assignment involves two distinct processes: one is pitch accent assignment, which, being viewed as an interface phenomenon, is achieved by phonological-conceptual correspondence rules; the other is nuclear accent assignment, which, being viewed as a genuine phonological phenomenon, is achieved by a phonological rule. Surface accentual patterns are seen as cumulative effects of these two processes.

On the basis of the two above-mentioned basic assumptions, I will next propose a set of rules entering into the accentuation of German imperative sentences. The first rule to be mentioned is Pitch Accent Assignment Rules. I propose that rules such as (32) and (33), formulated on the basis of generalizations (15) and (21), are operative in the accentuation of German imperatives.

(32) In a sentence uttered with neutral emotion, an NP which is specific on the part of the speaker, when it is contained in a broad focus domain, corresponds to a pitch accent. (Okazaki (1992a))

(33) In a sentence uttered with neutral emotion, a predicate which denotes an action, when it is contained in a broad focus domain, corresponds to a pitch accent. (Okazaki (1992b))

These two rules are both phonological-conceptual correspondence rules and apply at the initial stage of a phonological derivation. Thus, NPs and predicates which meet the conditions of the rules receive a pitch accent, or receive a metrical grid, irrespective of syntactic and phonological environments in which they occur. Note that neither the specific/nonspecific nor the action/nonaction distinction I am adopting here can be reduced to any syntactic or pragmatic representations (Okazaki (1992a, b)). That is why the rules have the status of a correspondence rule. Furthermore, the rules apply not only to German but also to other languages like English (Okazaki (1992a,b)), and the two conceptual-semantic distinctions govern the formation of accent assignment domains in Danish (Okazaki (1992c)). In this sense, the rules are not at all ad hoc.

The second rule to be formulated here is a rule for nuclear accent assignment. The rule, called here Nucleus Assignment, is formulated as in (34).

(34) Nucleus Assignment (German): Assign a pitch accent (a metrical grid) to the left-most pitch-accented word (word bearing a grid) in a PPh.

This rule, which follows the generalization in (30), is a rule particular to German and applies in the phonological component to the representation where PPhs and other postlexical phonological units are formed.

The third and most important rule to be formulated here is naturally a rule for German PPh-formation. I assume, following the current dominant stream of prosodic phonology, that PPh-formation is also seen as an interface phenomenon. The PPh, one of the prosodic units, is not necessarily isomorphic to syntactic units. That is, it should be formed by a phonological-syntactic correspondence rule. Here I newly propose a PPh-formation rule such as (35).[6]

(35) PPh-Formation (German): {left, X'}, if and only if, in the configuration $Y[_{X'}\cdot Z$, both Y and Z are contained in a focus domain.

This rule says that the left boundary of X' corresponds to a PPh-boundary if and only if both the left and the right domain of the left boundary of X' are contained in a focus domain. In fact, the rule applies before postlexical phonological rules apply. That is quite natural in a sense, for postlexical phonological rules generally have access to a phonological unit, not a syntactic

unit, as their application domains.

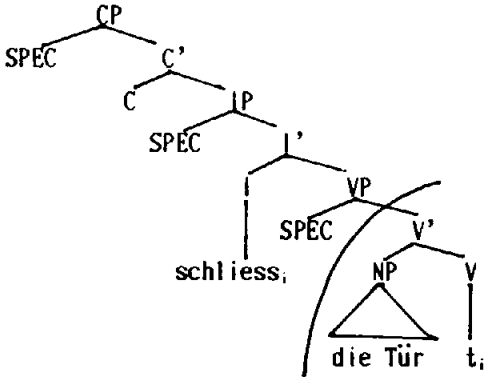
3.3. Derivation

Having formulated the relevant rules, we are now in a position to exhibit the prosodic derivation of German imperatives uttered with neutral emotion in a context where the whole sentence is interpreted as forming a broad focus domain. Take example (6a), repeated below, as a sample case.

(6) a. SCHLIESS die TÜR!

Sentence accent assignment to this example proceeds as indicated in (36).

(36) a. syntax



b. semantics

(i) [DO (du, die Tür)]

(ii) die Tür=specific NP

(iii) [$_{focus}$schliess die Tür]

c. phonology

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                X          X     ---(32), (33)
(i) [PPhschliess][PPhdie Tür]    ---(35)
                X          X     ---(34)
                X          X
(ii) [PPhschliess][PPhdie Tür]
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(36a-c) represent the correspondence between syntax, semantics, and phonology. (36a) represents the S-structure of (6a): the verb, which is generated in VP,

moves to the Infl-position. This syntactic structure corresponds to (36b), which is a collection of three pieces of semantic information involved in sentence accent assignment. As for (6a), it is an action proposition which has the ACTOR argument not overt at surface structure and the overt THING argument specific on the part of the speaker. In addition, it forms a broad focus domain as a whole. These representations correspond to the phonological representation in (36ci). Both the verb schliessen and the NP die Tür correspond to a pitch accent in accordance with rules (32) and (34). They also correspond to a PPh in accordance with rule (35): they cannot be contained in the same PPh because the NP die Tür is dominated by V'. Thus, rule (34) applies in (36cii) to each PPh and derives a prosodic pattern with two nuclear accents, which is compatible with the fact illustrated in (6a).

English imperatives like (10a), on the other hand, exhibit a different phonological derivation. In English, the sequence of a verb plus its object NP forms a syntactic constituent, as mentioned section 3.1, and also forms a PPh (Hayes (1989: 218)). In addition, the verb is an action predicate, and the object NP is specific on the part of the speaker. Since rules (32) and (33) are also operative in English (Okazaki (1992a, b)), (10a) has the following prosodic structure at the initial stage of its phonological derivation:

(37) a.
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        X       X
[PPh Close the door]
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Notice here that in English, a nuclear accent is assigned to the rightmost pitch-accented word in a PPh (Okazaki (1991a: 8)). Thus, the object NP the door receives a nuclear accent, as in (37b) below.

(37) b.
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                X
        X       X
[PPh Close the door]
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We have now seen that facts about German imperatives uttered with neutral emotion in a context where the whole sentence forms a broad focus domain are accounted for by the phonological-conceptual correspondence rules in (32) and (33), Nucleus Assignment (34), PPh-formation (35). We have also seen that

German imperatives are phonologically different from those of English in that if they form a broad focus domain, they have two PPhs. The accentual peculiarity of German imperatives stems from this fact. We are therefore in a position to provide an answer to questions (12) and (27), both of which are repeated below.

(12) Why is it that nuclear accent falls on both the verb and an object NP in an imperative sentence uttered with neutral emotion in a context where the verb and the NP form a broad focus domain?

(27) Why is it that German imperatives consisting of a verb and a definite object NP do not exhibit the prosodic behavior parallel to their English counterparts?

The same simple answer is provided for these two questions. The answer is that as mentioned just above, German imperatives comprising an action verb and a specific NP, when the verb and the NP form a broad focus domain, have two PPhs. That is why they receive two nuclear accents and exhibit a prosodic pattern different from that of English imperatives comprising an action verb and a specific object NP, which have only one PPh.

It should be noted that our task has not been completed. In order to show the validity of the three kinds of rules formulated in section 3.2, we must demonstrate that the rules account not only for the prosody of imperatives but also for that of other wide range of cases. We will be committed to this task in the next section.

4. Further Cases

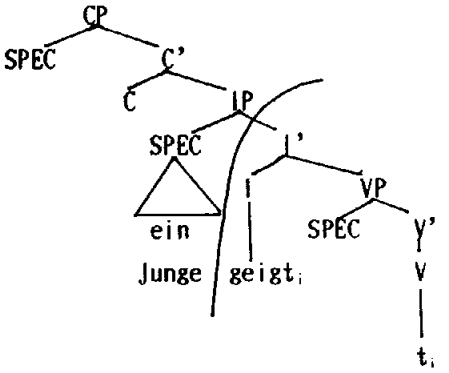
4.1. The Accentuation of Intransitive Sentences

The first piece of evidence in support of the three rules proposed in section 3.2 comes from the prosodic pattern of German intransitive sentences listed in (23). Take (23a), repeated below, as a sample case.

(23) a. Ein JUNGE GEIGT.

The process of accent assignment to (23a) is indicated in (38).

(38) a. syntax



b. semantics

(i) [DO (ein Junge, eine Geige)]

(ii) ein Junge=specific NP

(iii) [$_{focus}$ein Junge geigt]

c. phonology

X X ---(32), (33)

(i) [$_{PPh}$ein Junge][$_{PPh}$geigt]---(35)

X X ---(34)

X X

(ii) [$_{PPh}$ein Junge][$_{PPh}$geigt]

(38a) is the S-structure of (23a). The subject NP is generated at the SPEC-position of IP and remains there, and the verb, which is generated within VP, is raised to the Infl-position. This S-structure corresponds to the conceptual representations in (38b). (23a) is an action proposition, for the verb geigen 'play the violin', which is paraphrased into Geige spielen, is an action predicate. The subject NP ein Junge is specific on the part of the speaker. In fact, the whole sentence forms a broad focus domain. These representations also correspond to the phonological representation in (38ci). A pitch accent is assigned to the subject NP and the verb in accordance with rules (32) and (33). At the same time, two PPhs are formed by rule (35). The subject NP and the verb cannot be contained in the same PPh because the verb, which occupies the Infl-position, is dominated by I'. On the basis of this deep prosodic structure derived by the two kinds of correspondence rules, rule (34), a phonological rule, applies in (38cii) to derive the surface prosodic structure of (23a),

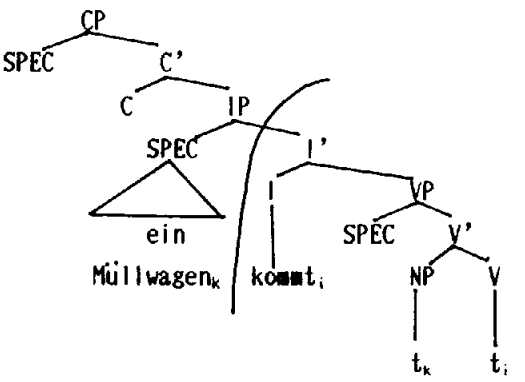
which has two nuclear accents.

Other intransitive sentences with two nuclear accents, which are uttered with neutral emotion in a context where the whole sentence forms a broad focus domain are best explained in exactly the same manner. Note here that neutral-emotioned intransitive sentences such as those in (24), which have only one nuclear accent on the subject NP even in a context where the whole sentence forms a broad focus domain, seem to be treated by the three above-mentioned rules. Take (24a), for instance.

(24) a. Ein MÜLLwagen kommt.

The syntactic and the semantic representation of this example are given below.

(39) a. syntax



b. semantics

(i) [GO (ein Müllwagen)]

(ii) ein Müllwagen=specific NP

(iii) [$_{focus}$ein Müllwagen kommt]

The syntactic derivation of (24a) is different from that of (23a). As in (39a), both the subject NP and the verb are generated in VP, for the verb kommen 'to come' is an example of so-called ergative verbs. Thus, at S-structure, both the NP and the verb are raised to the IP-SPEC- and the Infl-position. The semantic property of (24a) is also different from that of (23a). As shown in (39bi), it is a process proposition, for the verb is a process predicate. These two

differences are reflected in the surface prosodic pattern of (24a). As shown in (39c), the prosodic difference is correctly predicted by rules (32)-(35).

(39) c. phonology

(i) X ---(32)

[$_{PPh}$ein Müllwagen][$_{PPh}$kommt]---(35)

(ii) X ---(34)

X

[$_{PPh}$ein Müllwagen][$_{PPh}$kommt]

Since the verb kommen is a nonaction verb, a pitch accent is assigned only to the subject NP, which is specific. Two PPhs are also derived by (35) from the S-structure in (39a). In (39cii), rule (34) applies only to the PPh that the subject NP forms, not to the PPh that the verb forms, for the verb does not bear a pitch accent. As a result, the correct prosodic structure seems to be ultimately derived. Notice, however, that the prosodic structure in (39) is problematic in that it has two PPhs. The problem that the structure in (39) raises will be discussed in section 5.3.

4.2. The Accentuation of Transitive Sentences

The second piece of evidence for the rules proposed in section 3.2 involves facts about the accentuation of transitive sentences. Some sample cases are given in (40) and (41), where the underlined years mean, for a typographical reason, that they receive a nuclear accent.

(40) a. Am 20. Mai 1871 hat ein ERDbeben ROM erschüttert.
'On the 20th of May, 1871, an earthquake shook Rome.'

b. Die Londerner POLIZEI hat einen RAUSCHGIFThandlerring gesprengt.
'The London police have scattered drugtracking.'

(a-b, from Lötscher (1983: 47))

(41) a. Was ist passiert?---Ein UNBEKANNTER hat an Scotland YARD eine BOMBENdrohung gesandt.
'What's happened?---A man unknown to us has made a threat of bombing to Scotland Yard.'

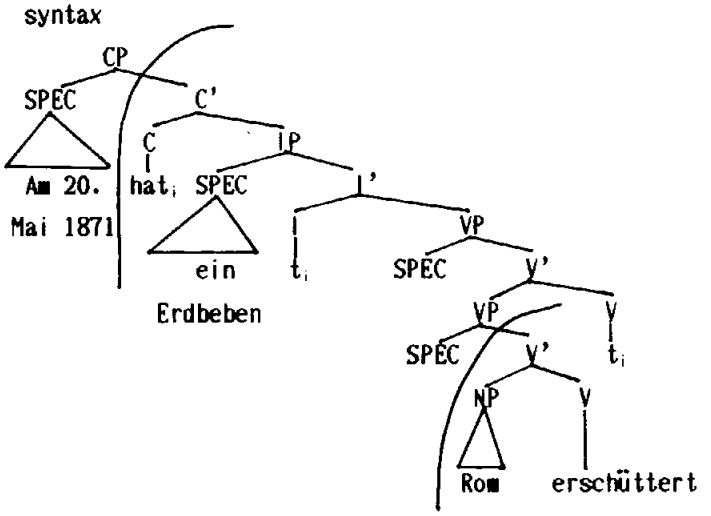
b. Was ist passiert?---Ministerpräsident SPÄTH will sich von 1979

an auf die LANDESpolitik konzentrieren.
'What's happened?---Prime Minister Späth will be devoted to domestic policies from 1979 on.'
(a-b, from Lötscher (1983: 68))

The examples in (40) and (41) are all uttered with neutral emotion in a context where the whole sentence forms a broad focus domain. Note that the facts are best explained by the three rules proposed in section 3.3. Take (40a) as a sample case.

The accent assignment to (40a) proceeds as indicated below.

(42) a. syntax



b. semantics
(i) [BE (ein Erdbeben$_i$, [DO (___$_i$, Rom)])]
(ii) ein Erdbeben=specific NP, Rom=specific NP
(iii) [$_{focus}$am 20. Mai 1871 hat ein Erdbeben Rom erschüttert]

c. phonology

	X	X	X	X	-(32),(33)
(i) [$_{PPh}$am 20. Mai 1871][$_{PPh}$hat ein Erdbeben][$_{PPh}$Rom erschüttert]					-(35)
	X	X	X		-(34)
	X	X	X	X	

(ii) [$_{PPh}$am 20. Mai 1871][$_{PPh}$hat ein Erdbeben][$_{PPh}$Rom erschüttert]

In (42a), which represents the S-structure of (40a), the PP am 20. Mai 1871

occupies sentence-initial position, and the perfective haben, the second position in accordance with V2. (42b) is a collection of semantic information relevant to sentence prosody. Example (40a) is a complex proposition in that it has two predicates: the perfective haben is a state predicate which takes the subject NP and an action proposition as arguments, and erschüttern is an action predicate which takes two specific argument NPs. In addition, the whole sentence forms a broad focus domain. These representations play a crucial role in the prosodic derivation in (42c). At the initial stage ((42ci)), (42a) contributes to PPh-formaiton, and (42b), to pitch accent assignment. At the next stage ((42cii)), rule (34), which has access only to PPhs, applies to derive a prosodic structure with three nuclear accents, which reflects the fact.[7]

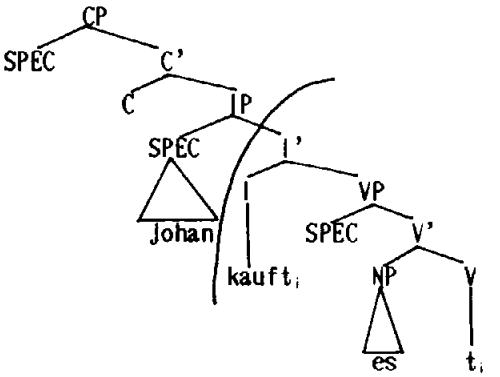
There is further evidence for the three kinds of rules proposed in section 3.2 which comes from the accentuation of transitive sentences uttered with neutral emotion in a context where the verb and either the subject or the object NP form a broad focus domain. To illustrate the point, consider the accentuation of (13b) and (13c), repeated below.

(13) b. Was gibt es Neues von dem Hause?---JOHAN KAUFT es.
c. Was tat Johan?---Er KAUFTE ein HAUS.

The (b)-example has the focus domain consisting of a verb and its subject NP, and the (c)-example, the focus domain consisting of a verb and its object NP. It is worth noting that both examples receive two nuclear accents: the verb and either the subject or the object NP receive a nuclear accent. This fact is best explained by rules (32)-(35).

Take (13b) as a sample case. Its derivation proceeds as shown in (43).

(43) a. syntax



b. semantics

[DO (Johan, es)]

Johan=specific NP, es=specific NP

[$_{focus}$Johan kauft]

c. phonology

X X ---(32), (33)

(i) [$_{PPh}$Johan][$_{PPh}$kauft es]---(35)

X X ---(34)

X X

(ii) [$_{PPh}$Johan][$_{PPh}$kauft es]

(43a) represents the S-structure of (13b). As in the other cases considered so far, the verb moves to the Infl-position in accordance with V2. (43b), a collection of semantic information, indicates that (13b) is an action proposition which consists of the action predicate kaufen 'to buy' and two specific argument NPs, and has a focus domain containing the verb and the subject NP. These two kinds of information correspond to the prosodic pattern of the sentence. A pitch accent is assigned to both the subject NP and the verb in accordance with rules (32) and (33). Two PPhs are formed in accordance with rule (35). Pronouns like er and es, having the status of old information, cannot form their own PPhs according to rule (35), so that the object pronoun es cannot form a PPh and is incorporated into the adjacent PPh formed by the verb. At the next stage of deriveation, rule (34) assigns a grid to each PPh to produce a two-nucleus prosodic structure. It is worthy of note here that rule (35) correctly predicts that there is a PPh-boundary between the subject NP

and the verb. Otherwise, an incorrect prosodic structure such as (44) would be produced.

(44) X
X X
*[$_{PPh}$Johan kauft es]

The derivation in (43) therefore provides evidence for the PPh-formation rule in (35). The surface prosodic structure of (13c) is derived in exactly the same manner, and the example also serves as evidence for rule (35).

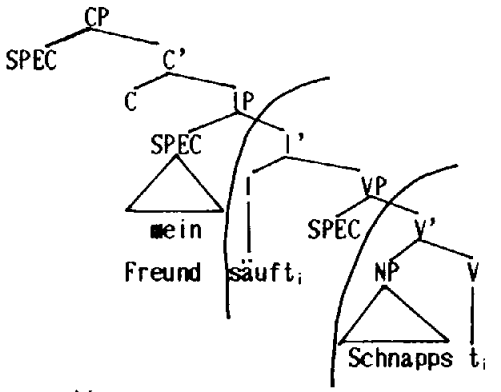
It should be noticed here that rule (35) produces an incorrect prosodic structure for cases like (13a), repeated below.

(13) a. Warum bist du so verärgert?---Mein FREUND säuft SCHNAPPS.

We should note two facts here. One is that in (13a) the whole answer sentence forms a broad focus domain. The other is that nuclear accent falls on the subject and the object NP, not on the verb.

The syntactic and the semantic representation of (13a) is given in (45a) and (45b), respectively.

(45) a. syntax



b. semantics

(i) [DO (mein Freund, Schnapps)]

(ii) mein Freund=specific NP, Schnapps=specific NP

(iii) [$_{focus}$mein Freund säuft Schnapps]

On the basis of (45a) and (45b), the prosodic structure of (13a) is derived as in (45c).

(45c) c. phonology

(i) X X X ---(32), (33)

[$_{PPh}$mein Freund][$_{PPh}$säuft][$_{PPh}$Schnapps] ---(35)

(ii) X X X ---(34)

X X X

*[$_{PPh}$mein Freund][$_{PPh}$säuft][$_{PPh}$Schnapps]

The point here is that since three PPhs are formed in (45ci) from the S-structure in (45a) by rule (35), an incorrect structure with three nuclear accents is derived in (45cii). We must naturally prevent (45cii) from being derived. Otherwise example (13a) would serve as a counterexample to rules (32)-(35). I will tackle this problem in section 5.1.

5. Puzzles

The previous sections have shown that rules (32)-(35), formulated in section 3.2, are capable of accounting for a wide range of facts about German sentence accent assignment. At the same time, however, the rules raise a puzzle to be resolved so that the framework sketched in section 3.2 can be maintained. In fact, a solution to the puzzle produces other puzzles. In this section, therefore, I will propose principled solutions to the puzzles which refine and articulate the framework proposed here.

5.1. The Restructuring of PPhs

The puzzle to be resolved, which was pointed out in section 4.2, comes from the accentuation of transitive sentences containing an action verb and a specific subject and a specific object NP. The problem is that as indicated in (46), the rule system proposed here incorrectly produces a three-nucleus prosodic structure for simple transitive sentences.

(46) X X X

X X X

*[$_{PPh}$mein Freund][$_{PPh}$säuft][$_{PPh}$Schnapps]

In order to resolve the puzzle under consideration, I propose here that a PPh-restructuring rule such as (47) is contained in the particular grammar of German.

(47) PPh-Restructuring (German)

$PPh_1\ PPh_2\ PPh_3 \rightarrow 1\#2\ 3$

1 2 3

This rule says that in the succession of three PPhs, the first and the second PPh are merged into one. It is a genuine phonological rule and is ordered after PPh-Formation and before Nucleus Assignment.

The phonological derivation of the above example, then, proceeds as follows:

(48) a.

X X X ---(32), (33)

$[_{PPh}$mein Freund$][_{PPh}$säuft$][_{PPh}$Schnapps$]$---(35)

b.

X X X

$[_{PPh}$mein Freund säuft$][_{PPh}$Schnapps$]$ ---(47)

c.

X X ---(34)

X X X

$[_{PPh}$mein Freund säuft$][_{PPh}$Schnapps$]$

At the first stage of derivation, pitch accents and PPh-boundaries are assigned by the correspondence rules. At the second stage, rule (47) applies to merge the first and the second PPh into one. At the final stage, rule (34) applies to produce the correct prosodic structure with two nuclear accents.

Notice here that there is another conceivable option to resolve the puzzle. The option is to formulate a clash deletion rule such as (49).

(49) Clash Deletion

$X \rightarrow \phi / X \_ X$

X X X

It is indeed true that rule (49) is able to produce the correct prosodic structure for the above example and that there is no a priori reason for rejecting

the rule. In fact, it seems highly likely that rule (49) is operative in the derivation (48): the words in the example are all monosyllabic, so that the the grids are strictly adjacent to each other. Note, however, that rule (49) does not work well. As shown in (50), where the examples are uttered with neutral emotion in a context where the whole sentence forms a broad focus domain, verbs do not bear a nuclear accent even when the primary-stressed syllable of a verb, which is a pitch-accent-bearing element, is not phonologically adjacent to the primary-stressed syllable of the subject or the object NP.

(50) a. PETER betrachtet ein BUCH.
'Peter is looking at a book.'
Cf. betráchten

b. Die chinesische NACHRICHTENagentur beschuldigt die SOWJETunion der AGGRESSION.
'The chinese new agency is accusing the Soviet Union of her aggression.'
Cf. beschúldigen

In both (50a) and (50b), the primary-stressed syllable of the verb, which is a pitch-accent-bearing element, cannot be said to be adjacent to the primary-stressed syllable of the subject or the object NP. Thus, the lack of a nuclear accent on the verb in examples like (13a) cannot be attributed to the process of clash deletion. Rather, it should be attributed to the restructuring of PPhs.

We are now in a position to provide an anwer to question (14), which is repeated below:

(14) Why is it that the verb in an imperative sentence uttered with neutral emotion in a context where the verb is contained in a broad focus domain receives a nuclear accent, whereas the verb in a declarative sentence uttered under the same condition does or does not receive a nuclear accent?

The answer to this question is that rule (47) applies only to declaratives containing three PPhs, and does not apply to simple imperatives, which contain at most two PPhs because they consist of a verb and an object NP.

5.2. PPh-Restructuring and the Strict Layer Hypothesis

We have now resolved the puzzle raised in section 4.2 by postulating rule (47), but its postulation raises another puzzle to be resolved. The puzzle is typically seen in the prosodic structure of (40a), repeated below as (51).

(51)
X X X
X X X X
$[_{PPh}$am 20. Mai 1871$][_{PPh}$hat ein Erdbeben$][_{PPh}$Rom erschüttert$]$

The prosodic structure in (51), which has three nuclear accents, is the correct prosodic structure of example (40a). Particularly noteworthy in (51) is the fact that the prosodic structure, which contains three PPhs, meets the structural description of (47). But application of the rule produces a prosodic structure like (52c) which does not reflect the fact. This is the puzzle we must resolve here.

(52) a.
X X X
$[_{PPh}$am 20. Mai 1871$][_{PPh}$hat ein Erdbeben$][_{PPh}$Rom
X ---(32), (33)
erschüttert$]$---(35)

b.
X X X X
$[_{PPh}$am 20. Mai 1871 hat ein Erdbeben$][_{PPh}$Rom erschüttert$]$ ---(47)

c.
X X ---(34)
X X X X
*$[_{PPh}$am 20. Mai 1871 hat ein Erdbeben$][_{PPh}$Rom erschüttert$]$

Here we should take notice of a crucial syntactic difference between (13a) and (40a), repeated below.

(13) a. Mein FREUND säuft SCHNAPPS.
(40) a. Am 20. Mai <u>1871</u> hat ein ERDbeben ROM erschüttert.

The crucial difference lies in the status of an element occupying sentence-initial position. In (13a), the subject NP, an argument of the verb, occupies the position. In (40a), on the other hand, an adjunct PP occupies the position.

Furthermore, Bierwisch (1966: 108) observes that, as shown in (53), PPs occupying sentence-initial position form an Intonational Phrase (IPh).

(53) a. $[_{IPh}$Dadurch$][_{IPh}$hat es sich geändert].
'Through it, it has changed.'
b. $[_{IPh}$Es hat sich dadurch geändert].
'It has changed through it'

In the (a)-example, the PP dadurch occupies sentence-initial position, and there is an IPh boundary between the PP and hat. In the (b)-example, on the other hand, there is no internal IPh boundary. I do not formulate an IPh-formation rule for German, for the nature of IPhs is still poorly understood. It is sufficient here to point out the fact that in (53a) the PP and the verb following it are separated from each other by an IPh-boundary.

The examples in (53) suggest that in (40a) there also exists an IPh-boundary between the PP am 20. Mai 1871 and the verb hat. In particular, (40a) has the following prosodic structure.

(54) $(_{IPh}$ $)$ $(_{IPh}$ $)$
$(_{PPh}$ $)$ $(_{PPh}$ $)$ $(_{PPh}$ $)$
Am 20. Mai 1871 hat ein Erdbeben Rom erschüttert.

If PPh-Restructuring (47) were to apply to (54), a prosodic structure like (55) would be derived.

(55) $(_{IPh1}$ $)$ $(_{IPh2}$ $)$
$(_{PPh1}$ $)$ $(_{PPh2}$ $)$
*Am 20. Mai 1871 hat ein Erdbeben Rom erschüttert.

The prosodic structure in (55) is ill-formed, however. It violates the proper-bracketing requirement of the Strict Layer Hypothesis (SLH), which is given below:

(56) Strict Layer Hypothesis:
a. Proper Bracketing: Every $C_j(=C_{max})$ has one and only one mother

mode (i.e. a given prosodic constituent cannot simultaneously be part of two or more higher prosodic constituents).

b. Strict Succession: Every $C_j(=C_{max})$ is immediately dominated by by C_{j+1} (i.e. category levels are never skipped).

(Nespor and Vogel (1986: 7); Itô and Mester (1992: 8))

In particular, the prosodic structure in (55) violates (56a): PPh1 is simultaneously part of IPh1 and IPh2. That is why application of rule (47) to (40a) is blocked. In other words, examples like (40a) do not constitute a counterexample to rule (47).[8]

5.3. Intransitive Sentences with an Accentless Predicate

We have now resolved two puzzles, but we are still confronted with a further puzzle. This puzzle is raised by example (53a) and is concerned with the prosodic structure of examples like (24a), repeated below.

(24) a. Ein MÜLLwagen kommt.

Recall in the first place that in (53a), the sentence-initial PP corresponds to an IPh. Note further that the PP bears a secondary accent (Bierwisch (1966: 108)), even though it has the status of old information and serves as a scene-setting expression. The rules proposed thus far, however, cannot predict the presence of an accent on the PP. A question arises as to a way of accent assignment to PPs like that in (53).

It should be noticed that, as in (57), (53) has two PPhs. The sentence-initial PP forms its own PPh in accordance with the proper-bracketing requirement of the SLH ((56a)).

(57) $(_{IPh1}\ )\ (_{IPh2}\qquad\ )$
$(_{PPh1}\ )\ (_{PPh2}\qquad\ )$
Dadurch hat es geändert.

Given the hypothesis that the PPh is defined as the domain of nuclear accent assignment (cf. (30)), a desriptive generalization such as (58) follows from the prosodic structure in (57).[9]

(58) A PPh comprising one word, when it does not receive any accent, receives a pitch accent.

This generalization is indeed able to capture the fact in (53), but raises a further puzzle. Recall here that example (24a) also has two PPhs, as indicated in (59) below (cf. (39)).

(59) [$_{PPh}$ein Müllwagen][$_{PPh}$kommt]

The generalization in (58) predicts that the verb kommt, which has its own PPh, receives a secondary accent. But this prediction is factually incompatible. Nonaction verbs like kommen does not receive a pitch accent, either nulear or secondary, when they occur in a sentence uttered with neutral emotion in a context where the sequence of the subject NP plus the verb forms a broad focus domain. Thus, we must prevent a pitch accent from being assigned to nonaction predicates which form their own PPhs in a broad focus domain.

To this end, I propose that a semantic constraint on PPh-formation such as (60), originally proposed by Okazaki (1992d) on the basis of English data, is also operative in German PPh-formation.[10]

(60) Semantic Constraint on PPh-formation:
Nonaction-type predicates, even when they meet the syntactic and the focal conditions, cannot form their own PPh, and are incorporated into an adjacent PPh.

This constraint requires that the verb kommt, which meets the syntactic and the focal conditions on PPh-formation, do not form its own PPh in (24a). As a result, the verb and the subject NP are contained in the same PPh. Thus, rule (34) assigns a grid only to the subject NP, and the correct prosodic structure is derived. That is, the generalization in (58) does not apply to (24a): the verb does not form its own PPh, as shown in (61).

(61)
```
        X                          ---(34)
        X                          ---(32)
[PPhein Müllwagen kommt]           ---(35), (60)
```

One might argue that the constraint in (60) could be stated in syntactic terms. That is because the nonaction predicates adduced thus far, including ergative predicates (e.g. kommen and fahren) and a passive predicate (ermordet worden sein), are all characterized as having the subject generated within VP and raised to the IP-SPEC-position. Thus, it might be possible to reduce the semantic constraint in (60) to a syntactic constraint referring to the derivational history of a sentence. In fact, however, it is impossible to do so.

There are two reasons for rejecting this argument. The first reason, which is theoretical, is that postulation of a constraint referring to a syntactic derivational history leads us to treat German PPh-formation as a kind of a so-called "global phenomenon". This is obviously an undesirable result, for a lot of linguistic phenomena which seem to be global have been proved to be nonglobal (see Chomsky (1972) and Ota and Kajita (1974), among others). In addition, postulation of a constraint on PPh-formation referring to a syntactic derivational history implies that traces enter into PPh-formation. This is also an undesirable result. Empty categories are generally invisible to phonological phenomena including phonological unit formation. As far as I know, there is no language in which PPh-formation has access not only to syntactic structure itself but also to empty categories.

The second reason for rejecting a syntactic constraint on PPh-formation is that there actually exist German nonaction-type predicates which cannot be seen as ergatives. To illustrate the point, consider the facts in (62).

(62) a. Hier steht, dass vielen Asthmatikern eine KNEIPPkur helfen würde.
'It is said that a Kneippian cure would be helpful for many asthmatic patients.'

b. Ich glaube, dass dem Grossvater eine KUR guttun würde.
'I believe that a cure would be good to Grandfather.'

c. Ich glaube, dass dem Grossvater ein POPkonzert gefallen würde.
'I believe that a popconcert would be pleasant to Grandfather.'

((a) from Uhmann (1991: 200); (b) and (c) from Grewendorf (1989: 218))

In (62), the examples are uttered with neutral emotion in a context where the

underlined verbs are contained in a broad focus domain. The verbs helfen 'to be helpful', guttun 'to be good', and gefallen 'to be pleasant', which Grewendorf (1989) calls theme verbs, are all state predicates, and remain accentless even in a broad focus domain. The accentlessness of these predicates in a broad focus domain is also guaranteed by prohibiting them from forming their own PPhs. That is, prosodic structures like [$_{PPh}$... ein Kur guttun würde] must be generated in which the subject NP and the verbs are contained in the same PPh. If the verbs in (62) shared a syntactic property with ergatives in that they had the subject generated in VP, the fact that the verbs do not form their own PPhs could be capturted by a syntactic constraint referring to a derivational history. However, the verbs in (62) and other theme verbs like those in (63), though they constitute a phonological class with ergatives, do constitute a syntactic class with unergative verbs.

(63) schaden 'to be harmful', fehlen 'to lack', gehören 'to belong', entschprechen 'to correspond', schmecken 'to be tasty', etc.

Grewendorf (1989: 180ff.) demonstrates that the verbs in (62) and (63) exhibit syntactic behavior parallel to unergative verbs, not to ergative verbs, in a number of constructions. Consider the facts in (64)-(69), where the (a)-, the (b)-, and the (c)-examples contain a theme, an unergative, and an ergative verb, respectively.

(64) Auxiliary selection

a. Die Suppe {hat/*ist} geschmeckt.
'The soup has been tasty.'

b. Er {hat/*ist} gearbeitet.
'He has worked.'

c. Ich {*habe/bin} die Arbeit durchgegangen.
'I have gone through the work.'

(65) Participles of Atributes

a. *die geschmeckte Suppe (intransitive reading)
'the tasty soup'

b. *der gearbeitete Student
'the worked student'

c. der geschalafene Student
the fallen-asleep student='the student who has fallen asleep'

(66) Topicalizability of Subject+Participle

a. *Ein Kotelett geschmeckt hat dem Vater noch nie.
a cutlet tastes has the father so far never

b. *Der Kanzler gerettet hat gestern einen Pudel.
The chancellor rescued has yesterday a poodle.

c. Ein Fehler unterlaufen ist dem Hans schon lange nicht mehr.
'For a long time now, Hans has not made a mistake.'

(67) Discontinuous Phrases

a. *Studenten haben in dieser Prüfung die besten/fleissige versagt.
students have in this exam the best/industrious one failed

b. *Studenten haben fleissige das Seminar besucht.
students have industrious the seminor taken part in

c. Wiederspruche sind dem Richter mehrere aufgefallen.
'As for contraditions, the judge noticed serveral'

(68) Extraction from NP subjects

a. *Über Boris Becker$_i$ hätte [ein Sieg e$_i$] den Zuschauern gefallen.
over Boris Becker had a victory the spectators pleased

b. *Über Boris Becker$_i$ hat dem Grossvater [ein Sieg e$_i$] begeisert.
A victory over Boris Becker has excited Grandfatther.

c. Über Boris Becker$_i$ ist dem Studenten [ein Sieg e$_i$] gelungen.
'A victory over Boris Becker has succeeded to the students.'

(69) Dative

a. ?Dem Gisbert weiss ich was {guttun/gefallen} würde.
'I know what would {do Gisbert good/please Gisbert}.

b. ?Dem Peter weiss ich nicht wer Radios geschenkt haben könnte.
'I don't know who could have given Peter radios.'

c.*?Dem Peter weiss ich nicht welche Gedanken kommen könnten.
'I don't know which ideas could occur to Peter.'

The facts in (64)-(69) clearly show that theme verbs constitute a syntactic class with unergative verbs. On the basis of these facts, Grewendorf claims that the IP-SPEC-position of theme verbs is a theta-position. This claim implies that the subject of a theme verb is generated at the IP-SPEC-

position. If this is correct, the prosodic property shared between ergative and theme verbs must be derived from their shared semantic property; that is, from their being nonaction predicates.

6. Cinque (1993) on German Sentence Prosody

Cinque (1993) proposes a new syntax-based theory of sentence prosody on the basis of the findings of Kiparsky (1966), who amounts to saying that NPs and CPs receive final accent ("stress" in Cinque's term), whereas IPs and VPs receive initial accent. The crux of his proposal is as follows:

(70) a. There is no language-particular rule like the Nuclear Stress Rule. Rather the location of the nulear accent is automatically predicted from the mode of syntactic branching.

b. In right-branching structures, the most deeply embedded element in the rightmost branch receives a nuclear accent; in left-branching structures, on the other hand, the most deeply embedded element in the leftmost branch receives a nuclear accent.

c. The prosodic shape of a sentence is determined not only by syntactic information but also by the focus/presupposition distinction.

Cinque (1993) claims that the three proposals above predict correct accentual patterns of German sentences. To illustrate the point, consider the following facts, which Cinque adduces as support for his own porposal.[11]

(71) a. $[_{CP}[_{C}\cdot[_{IP}$Waldemar$[_{I}\cdot$spielt$_{i}[_{VP}$THEATHER $t_{i}]]]]]$.
'Waldemar is on the stage.'

b. $[_{CP}$Das Buch$_{k}[_{C}\cdot$findet$_{i}[_{IP}$er$[_{I}\cdot t_{i}[_{VP}\, t_{k}$ INTERESSANT $t_{i}]]]]]$.
'The book, he finds interesting.'

In (71), both (a)- and (b)-example have a right-branching syntactic structure, and nuclear accent falls on the most deeply embedded element in the rightmost branch, and this is the "normal stress" pattern for these examples. This is automatically predicted by (70) without any language-particular specifications. He further argues that apparent counterexamples like (72)(=(24a)), where the

most deeply embedded element is accentless, is accounted for by taking into the focus/presupposition distinction into account.

(72) $[_{CP}[_{C'}[_{IP}$ein MÜLLwagen$_k[_{I'}$ kommt$_i[_{VP}$ t_k t_i]]]]].

Cinque argues that the accentlessness of the verb kommt is due to the fact that it is presupposed or has the status of old information at the time of utterance.

Cinque's account of German sentence accent, though it at first glance seems consistent and descriptively adequate, has at least two problems. The first problem is that his (universal) accent assignment rule, which is based on the "one-nucleus-per-sentence hypothesis", cannot account for multi-nucleus patterns discussed in the present paper. The multi-nucleus pattern should be taken as an explanatory target of Cique's theory of sentence accent. That is because the multi-nucleus patterns discussed in the previous sections form a broad focus domain and are uttered with neutral emotion. That is, they are not influenced by any emotional or contextual factors, and serve as an explanatory target of generative-phonological investigation of sentence prosody. In addition, the data he adduces as support for his rule do not have the status of an explanantory target of generative phonological investigation of sentence accent. Take (71a), for instance. This example is most appropriate either in a context where the subject NP is presupposed or in a context where the speaker is excited. It is inappropriate in a context where the whole sentence forms a focus domain and is uttered with neutral emotion.

The second problem is concerned with the accentuation of nonaction verbs like kommen. Cinque argues that these verbs are presupposed even in a sentence which is able to be uttered out of the blue. This argument is incorrect, however. There is no evidence that verbs like kommen are always presupposed. Thus, the accentlessness of such verbs in a broad focus domain should be attributed to another factor. As already mentioned in this paper, their accentlessness is attrituted to their conceptual-semantic property.

7. Conclusion

In this paper, I have been devoted to a novel characterization of the prosody of German imperative sentences. In particular, I have demonstrated that the prosody of German imperatives is derived by the application of two

phonolgical-conceptual correspondence rules for pitch accent assignment ((32) and (33)), Nucleus Assignment (34), and PPh-Formation (35). In fact, these three kinds of rules have been shown to be operative in a wide range of prosodic facts in German. The data treated in this paper have not been analyzed in a unified manner. Rather, they have been treated separately as unrelated phenomena. Recall that the rules utilized here enables us to treat them in a unified manner. In this respect, the present paper contributes to a better understanding of the nature of German sentence accents.

NOTES

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[1] Notice that two other variants also serve as appropriate answers to the question in (13b). Observe:

(i) Was gibt es Neues von dem Hause?---
  a. PETER kauft es.
  b. Peter KAUFT es.

The examples in (i) is, however, different from (13b), though they are uttered in the same verbal context. (ia) is appropriate when the speaker knows the fact that the house, which is topic, is on sale and that there are some people who want to buy it. In this case, the verb kauft, easily predictable, have the status of old information, even though it has no explicit antecedent in the preceding discourse. (ib) is appropriate when the speaker knows the fact that Peter has been looking for a house, either for sale or for rent. In this case, the subject NP has the status of old information, and only the verb kauft is

important enough to receive a nuclear accent. Thus, none of the two variants in (i) are explanatory targets of the present paper. But it is important to note that these two examples show that the speaker's world knowledge, together with verbal contexts, plays an important role in accent assignment.

[2] Imperatives with a nonspecific object NP such as (i) are excluded from the discussion here.

(i) Gib mir ein Buch. 'Give me a book.'

The reason for the exclusion is that although example (i) does indeed exhibit the accentual pattern parallel to its English counterpart, as shown in (ii), the prosodic pattern is rarely observed.

(ii) a. GIB mir ein Buch.
b. GIVE me a book.

It is difficult to elaborate contexts appropriate for the pattern of (iia).

[3] It is also possible to hypothesize that German is an SOVI language. In fact, this hypothesis is dominant in the field of German syntax. Notice, however, that the position of Infl does not affect the validity of the contention in the present paper. I adopt the German-as-an-SIOV-language hypothesis in order to avoid selfcontradition to the contention of Saito, Okazaki, and Shimada (1991).

[4] Imperatives like (7c), where the verb precedes the subject NP Sie, have a S-structure different from (28). In such cases, which exhibit the word order identical to interrogatives, the verb is raised to the C-position. This fact suggests the possibility that the verb in an imperative occupies the C-position. But I do not pursue this possibility here, for this kind of indeterminacy of the position of a verb does not affect the validity of the contention here. I assume here that the verb occupies the I-position in cases like (6a) and the C-position in cases like (7c).

[5] The prosodic categories are layered as indicated in (i).

(i) ( ) Utterance
( ) Intonational Phrase
( ) Phonological Phrase
( ) Phonological Word
( ) Foot
( ) Syllable

For general properties of prosodic structure, see Nespor and Vogel (1986), Selkirk (1986), Hayes (1989), and Itô and Mester (1992).

[6] Rule (35) is formulated in the style of Selkirk's (1986) edge-based theory of syntax-phonology correspondence (mapping). Note here that the category X' is not included in Selkirk's (1986) original list of category settings. But German prosodic facts cannot be accounted for by other category settings.

[7] Examples like (i) at first glance seem to be problematic for the treatment of German sentence prosody advocated here.

(i) $[_{CP}[_{PP}$Am 5. MAI$][_{C}$·brachte$_i[_{IP}[_{NP}$die ARMEE$][_{I}$·t$_i[_{VP}[_{V}$·eine neue ATOMbombe zur Explosion t$_i$]]]]]]]].
'On the 5th of May the army brought a new atomic bomb into explosion.'

In this case, nuclear accent falls on Mai, Armee, and Atombombe. But the rules utilized here produce the following unattested prosodic structure, for the verb bringen 'to bring' is an action verb.

(ii) X X X X X X

$[_{PP_h}$am 5. Mai$][_{PP_h}$brachte die Armee$][_{PP_h}$eine neue Atombombe zur Explosion].

However, the desired prosodic structure can be obtained by postulating grid movement triggered by clash. In this case, the two circled grids clash with each other, so that the circled grid on brachte moves onto Armee, producing the structure in (iii), which is compatible with fact.

(iii)

$[_{PPh}$am 5. Mai$][_{PPh}$brachte die Armee$][_{PPh}$eine neue Atombombe zur Explosion]

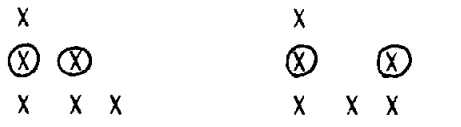
This rightward movement is independently motivated by the following facts, which were originally pointed out by Kiparsky (1966: 94).

(iv) a. 1 3 2
den Rock anziehen 'to put on the skirt'

b. 1 3 2
das Buch mitnehmen 'to take the book along'

Both anziehen and mitnehmen have primary word stress on the word-initial syllable, so that the examples in (iv) are derived as in (v).

(v) a.



den Rock anziehen → den Rock anziehen

b.

das Buch mitnehmen → das Buch mitnehmen

Thus, it is not unreasonable to postulate the rightward grid movement in (i).

[8] Note here that examples like (13a), a simple transitive sentence, have only one IPh, so that application of rule (47) does not bring about any violation of (56a).

[9] One might argue that the domain of accent assignment not influenced by focus structure could be defined as the IPh. However, this argument does not stand. Note that a prosodic phonological phenomenon generally has access to one prosodic unit. If the accent assignment captured by (58) had access to the IPh, accent assignment at sentence level would have access to both the PPh and the IPh. As far as I know, however, no prosodic phonological phenomena have

been found which have access to two prosodic categories.

[10] The same applies to nonspecific NPs. For further details, see Okazaki (1992d).

One might argue that a semantic constraint on PPh formation such as (60) is not likely to be attested in other languages. However, Okazaki (1992c) argues that the specific/nonspecific and the action/nonaction distinction rather than syntactic structure govern phononogical unit formation in Danish. If my argument is valid, it is not unreasonable to postulate the semantic constraint on German PPh-formation.

[11] Cinque assumes that German is an SOVI language, but the syntactic structures in (71) and (72) are adapted to the German-as-an-SIOV-language hypothesis I am adopting here. This adaptation, however, does not distort Cinque's original contentions.

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