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Keijsper, C.E.

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C. E. KEIJSPER

COMPARING DUTCH AND RUSSIAN PITCH CONTOURS*

0. In order to compare two systems, these systems must first be described in similar terms. Such descriptions are not available at present for the Dutch and Russian systems of intonation. In order to arrive at comparable descriptions one can take as a starting point either an existing description of the Dutch system and "translate" the Russian system into its terminology, or one can work the other way round, or one can propose a new terminology for both systems. As the last alternative is the most time-consuming it is preferable to try the other possibilities first. The best known description of Russian intonation is that given by E. A. Bryzgunova; on the Dutch side the most serious candidate is the description by J. 't Hart and other investigators of the Institute of Perception Research (IPO) at Eindhoven (see the References at the end).

In this article the IPO-description will be chosen as a starting point; an attempt will be made to interpret, in the terminology developed for Dutch intonation, the facts about Russian intonation as they are known from the publications of Bryzgunova and others. This attempt raises a number of questions about the precise form of Russian pitch contours; the main questions are listed in Part II below.

The sense of making this inventory of problems lies in the intended follow-up of this article: a series of experiments on Russian intonation to be conducted with the equipment made available by the IPO-research. A pilot experiment conducted by C. Odé (Amsterdam University), with the technical assistance of L. Boves (Nijmegen) and E. O. Kappner (Amsterdam), gives good grounds for assuming that the computer program devised for Dutch can also be applied to Russian. One aim of this article is to give this intended research some specific problems to start with, for, in view of the fact that much is already known about Russian intonation, it would be unreasonable to start experimenting from zero.

The choice of translating Bryzgunova's description into the IPO-terminology rather than the other way round has been made not only for the practical reason that this choice gives easy access to excellent technical facilities. It also reflects the opinion of the present author that the IPO-way of stylizing pitch phenomena provides a better basis for the linguistic analysis of intonation than Bryzgunova's description. Part I of

this article presents the argument for this opinion and a general outline of the analysis envisaged. Part II contains a preliminary analysis of the known facts.

Although Bryzgunova must be given the credit for having extensively described the Russian intonation system, and although her course has proved its usefulness for teaching Russian intonation to foreigners with divergent native tongues, her preoccupation with didactic applicability has, in my view, gradually led to some deviations from what is still acceptable from a linguistic point of view.

The IPO-approach to intonation has never been claimed to be a linguistic one. I think, however, that it is relatively easy to interpret the descriptions in a linguistic way. Although this interpretation sometimes amounts to a re-interpretation of the facts, my proposals are fully dependent on the IPO-research in the sense that I did not take any decision which is incompatible with the results of this research. For the linguistic exploitation of the IPO-descriptions the authors of these descriptions do not bear any responsibility.

Throughout this article, all comparisons between Russian and Dutch concern elements of the respective linguistic intonation systems; no claims are made about the phonetic identity of the elements compared.

Besides the literature mentioned in the References section, use was made of the sound cassette accompanying Collier and 't Hart (1978); for Russian the records that go with the 1977 edition of Bryzgunova's course were listened to.

Quotations from Russian and Dutch are given in my translation.

PART I

1. In a number of publications (e.g. Cohen and 't Hart 1967; 't Hart and Cohen 1973; 't Hart and Collier 1975) a procedure has been described by which the natural, continuously changing course of the fundamental frequency in an utterance can be replaced by a stylized equivalent which consists entirely of elements which are discrete and invariant on the perceptual level. The procedure is called "perceptual analysis", the stylized curve "pitch contour", and the composing elements "perceptually relevant pitch movements".

For Dutch the following inventory of perceptually relevant pitch movements has been arrived at.

Symbol	Drawing	Description
1		prominence-lending rise, early in the syllable;
2		non-prominence-lending rise, very late in the syllable;
3		prominence-lending rise, late in the syllable;
4		gradual rise, covering several syllables ("inclination");
5		"half" rise which can precede A in the same syllable;
A		prominence-lending fall, late in the syllable;
B		non-prominence-lending fall, early in the syllable or between two syllables;
C		non-prominence-lending fall, very late in the syllable;
D		gradual fall, covering several syllables;
E		"half" fall;
∅		high declination line
0		low declination line
		reference-lines, connecting the other movements.

See the publications referred to for more details.

For the greater part of the present article it is sufficient to memorize 1, A, B, 0, ∅.

The following contour, adapted from Collier (1972, 77), exemplifies all movements:

This contour transcribes:

0 ... 01D ... D4 ... 45 & A & 2B0 ... 01∅ ... ∅E∅ ...
 ∅A0 ... 02B0 ... 01&B0 ... 03∅ ... ∅C.

The symbol "&" is used when more than one movement occurs in one syllable; a notation as "0 ... 0" indicates that a movement covers

an unspecified number of syllables. Declination is henceforth left out from the drawings. An underlined letter indicates that the corresponding spoken syllable is prominent, e.g. *his mother arrived yesterday* (0 ... 010 ... 0A0 ... 0) stands for:

his mother arrived yesterday.

The separate perceptually relevant movements combine to form "intonation blocks" of three types; a grammar has been developed which specifies the possible blocks (e.g. Collier 1972; 't Hart and Collier 1971 and 1975). The blocks combine to form different elaborations of "intonation patterns" (the elaborations are called "variants", which is somewhat confusing from a linguistic point of view); at present, eight such patterns are being discerned, probably corresponding with the eight so-called End-blocks which have been found (Collier 1972, 125) (this point is not yet clear).

The linguistic status of blocks and patterns (if any) will not be discussed here. I shall use the name "contour" indiscriminately for single pitch movements and concatenations of movements, the name "centre" or "central part" for prominent segments (whether or not final ones), and the names "precentral" and "postcentral" parts ("precentre" and "postcentre") for the non-prominent stretches preceding respectively following the (final or non-final) central parts. These terms are translations from the Russian.

2. In the most recent versions of Bryzgunova's description of Russian intonation (Bryzgunova 1977; 1978; 1980a; 1980b) seven main contours are being discerned and an unspecified number of "modal realizations". The contours will be introduced in Part II; they are labelled IK-1 through IK-7. IK is the abbreviation of Intonacionnaja Konstrukcija (Intonation Construction).

3. The IPO-inventory of perceptually relevant pitch movements constitutes an attractive start for a linguistic analysis of intonation because, on the perceptual level, it does not contain:

- (1) nondiscretely different elements;
- (2) redundant elements;
- (3) circularities.

Re 1. As mentioned by Collier (1972, 3), "pitch phenomena can only be linguistically distinctive if they are perceptually relevant", that is: if they are discrete and invariant on the perceptual level. This statement is not

meant to deny that gradient pitch phenomena convey information, for example about the mood of the speaker, but it does assert that, for example, "steep fall and shallow fall are not two different contours, but are both instances of a single category fall", the actual occurrences of which can vary in size "without [...] destroying their identity as segments" (Ladd 1980, 204).

The criterion of perceptual discreteness is not always met by Bryzgunova's inventory of contours; some of her IK's are described as being only gradiently different. In Part II suggestions will be made for the elimination of such descriptions. The suggestions are of three types:

- (a) the contours involved are merged into one (Part II, Sections 6 and 7);
- (b) the contours involved are preserved, but the distinction between them is conjectured to be different from the one described by Bryzgunova (Part II, Section 4);
- (c) the contours involved are replaced by the same amount of other contours which divide among themselves the same sound continuum as the original contours, but in a different way (Part II, Section 1).

A perceptually discrete difference between two contours is, however, only a necessary, not a sufficient condition for assuming a linguistically discrete difference, for "some pitch events may be perceptually relevant and yet not be contrastive within the language system" (Collier 1972, 3).

Re 2. Bearing in mind the IPO-description of Dutch, one easily detects in Bryzgunova's inventory a number of redundancies on the perceptual level. For example, IK-3 has probably the form: prominence-lending rise plus non-prominence-lending fall plus low reference-line ( ) and IK-6: prominence-lending rise plus high reference-line ( ). The difference between the contours is reported to be made in the first syllable following the centre (Bryzgunova 1978, 22): in IK-3 pitch resumes the low reference-line, in IK-6 it remains on the high level attained in the central syllable. If this is correct, one can, instead of describing two different contours, break them down in smaller components and describe the contours as concatenations of these smaller components, so that the partial identity of the contours will be accounted for. Part II contains some proposals to this effect (Sections 3, 5).

However, if two contours are partially identical on the perceptual level they need not be so on the linguistic level (see Part I, Section 10).

Re 3. The IPO-approach to intonation is based on the opinion that "the study of the perceptual tolerance of pitch contours has to take precedence over the investigation of their linguistic function". "Otherwise there is a

risk of first postulating a number of linguistic functions and then forcing the pitch contours to account for them." (Collier 1975, 306).

Bryzgunova's description contains some instances of this well-known pitfall. They may be motivated by the didactic aims of her course, but in a linguistic description of intonation they ought to be removed. Examples are some of the nondiscretely different contours referred to in *Re 1* above, which are being differentiated because of the different functions they are presumed to have, and some of the "modal realizations" of IK's, which are being classified on the basis of their presumed function instead of their form. Consider, for example, the following description.

Introducing IK-3, Bryzgunova describes the contour as mentioned above, with a prominence-lending rise; the examples are questions without a question word, e.g. *éto Antón ?* (*is that Anton ?*) (1977, 38). On page 200 (*op. cit.*) the question *i lico pochože ?* (*and the face resembles ?*) is discussed; the contour described here consists of a rise on the syllable preceding the centre (*li-*), and a prominence-lending fall on *-co*; this is called a realization of IK-3: *i lico pochože ?*. The contour described, and spoken on the record (exercise 114), is, however, a straightforward example of IK-1: a prominence-lending fall plus a low reference-line following it plus, here, a non-prominence-lending rise on the syllable before the accent (a so-called "zanos"): *i lico pochože ?*. This is an example of what Collier (1975, 306) calls "an intonational prejudice", namely "that there 'should' be a typical 'question' as opposed to 'statement' intonation".

The IPO-description of Dutch does not contain such circular form-content-form analyses, but neither does it provide an alternative: it simply leaves out all references to the linguistic function of intonation. This heuristic principle has been very effective for the establishment of the perceptually relevant pitch movements, but now that these movements have been found for Dutch (and the method for finding them in other languages) more attention can be paid to the linguistic side of the problem.

4. Perceptual analysis as applied during the IPO-study of Dutch intonation is a combination of instrumental and auditory methods. The analysis does not render a detailed phonetic description as would result from an exclusively instrumental method. It acknowledges the fact that "there is less variance on the perceptual level than on the acoustic one, where no two natural utterances ever have identical physical properties" (Collier 1975, 295), that "the listener interprets what he hears in terms of a limited set of recognizable patterns" ('t Hart and Cohen 1973, 310), and that "the desired discreteness and invariance of the descriptive units can only be

found in the perceptual domain" ('t Hart and Collier 1975, 237). This acknowledgement does not result in the denial of the applicability of instrumental and experimental methods, for "if one wants to isolate the main lines and the relevant facts, one cannot impressionistically decide which details may be overlooked and which are pertinent" (Collier 1972, 22). Further, "it is not improbable that many linguistically non-trivial regularities simply escape the linguist's introspection and intuition" (Collier 1972, 20). The application of instruments and experiments cannot conceal, however, that "perception is a fundamentally subjective matter" (*op. cit.*, 5). This is inevitable because:

[...] one should not attempt to make perception itself more objective. Care should rather be taken to make the outcome of a perceptual analysis as objective as possible. In a perceptual study, where human beings are used as measuring devices, reliable results are obtained when a given outcome can be replicated at will with other subjects, when the results are consistent with related findings and when stimuli are of such a kind that the variables are under independent control (*op. cit.*, 5).

In short, "although a perceptual analysis is inevitably subjective, it need not necessarily be impressionistic" (*op. cit.*, 108a).

The success of the IPO-approach is due partly to the good equipment used, but mainly to the reliance on unprejudiced observation: "we let our ear – not the grammar – decide how delicate we should be" (*op. cit.*, 122).

Since Collier's dissertation there have been attempts to circumvent the subjectivity of perception. This qualification applies, in my view, to the replacement of the notion of a "perceptually equivalent contour" by the notion "close-copy stylization" (De Pijper 1979). The definition of close-copy stylizations contains, as compared with perceptually equivalent stylizations, the additional demand that they should be auditorily indistinguishable from the original F_0 curves ('t Hart 1979b, 61).

The advantage is that "being indistinguishable" can be verified much more formally than "being essentially the same", as is the case with a perceptually equivalent contour. The perceptually equivalent contour can now be obtained from the close-copy stylization by simply giving all movements their respective standard specifications (*ibid.*).

Because of the translatability mentioned in the previous sentence, I think that the intermediate step of close-copying can be left out of linguistic applications.

The perception of formal differences is, in my view, not more objective than the perception of semantic differences. For both it holds true that the "desired discreteness and invariance" is only present in the human mind, and that the analyses must therefore be conducted very carefully, with trained "ears". One cannot ask a "naive" speaker to draw the pitch

contours of his own utterances. Nor can one ask him what these pitch contours mean. It is the task of semantic analysis to make explicit the semantic knowledge which remains implicit in a "naive" speaker. One can ask such a speaker only specific questions, deriving from predictions which follow from the descriptions arrived at: care should be taken to make the outcome of a semantic analysis as objective as possible. But one should not attempt to make the object of study itself more objective than it is. A semantic description is not impressionistic if it applies a method of unprejudiced observation, and consistently observes a number of safeguards against arbitrary decisions.

5. A description of pitch contours as concatenations of smaller perceptual units induces one to think of the possibility that not concatenations as a whole, but composing parts are the minimal meaningful units of intonation. As mentioned by Ladd (1980, 15), "the main point of the 'tune-tone controversy' [...] is not whether tunes are composed of smaller parts but whether the smaller parts are semantically relevant".

A prerequisite for a contour element to be meaningful is that it be opposed to other elements which could have occurred in its stead in the same place of the contour. If the occurrence of an element is predictable on the basis of its melodic context it cannot be separately meaningful (it does not convey information). This opposition criterion enables one to segment a contour in potentially meaningful contour elements, and it introduces cases of neutralization. For example, it can probably be established by perceptual/instrumental analysis that the Russian IK-3 consists of a prominence-lending rise plus a non-prominence-lending fall plus a low reference-line ( ); after this it can be observed that a contour: prominence-lending rise plus non-prominence-lending fall plus high reference-line does not exist, nor a contour with a prominence-lending rise plus a low postcentral part without a fall in between; from this it can be concluded that in IK-3 the non-prominence-lending fall and the low reference-line are not separately meaningful.

An example of neutralization is the occurrence of IK-3/6 on an utterance (part) final syllable: (IK-3: , IK-6:). The opposition criterion can give different results in different languages. Consider the contour . In Dutch, this contour is opposed to , i.e. to a contour with a non-prominence-lending rise in the last syllable. In Russian the latter contour does not exist (as far as I know), so the last syllable in the Russian does not contribute to the meaning of the contour.

In cases where the opposition relations between contours can be described in more than one way, it is useful to keep in mind the fact that contour elements are pronounced and perceived in chronological order. When, for a sequence pqr , a choice must be made between descriptions (1) q is not opposed to x in the context $p \dots r$, and (2) r is not opposed to y in the context $pq \dots$, I shall choose the second alternative, i.e. I shall say: q already signals that r will occur, therefore the actual occurrence of r is redundant.

This linearity principle is overruled if there are reasons to assume that q can be identified as q only after r has occurred in the speech chain.

The procedure described enables us to say which contour segments are not separately meaningful. The procedure does not prove that the opposed segments are separately meaningful: the meaningful elements may be larger, but not smaller than the segments concerned (compare: a phoneme, although opposed to other units, is not meaningful).

6. Having segmented a contour in potentially meaningful elements on the basis of opposition relations, the next step aimed at is to determine whether the elements found are indeed separately meaningful.

This step involves two decisions. First, it must be decided which formal characteristic of a segment is potentially meaningful. Take, for example, the opposition IK-3 ( ) versus IK-6 ( ). The choice of a speaker who has made a prominence-lending rise can be described in two ways:

- (1) the speaker chooses between making or not making a non-prominence-lending fall; or
- (2) he chooses between going to or not going to the low reference-line.

The description one gives constitutes an hypothesis on the native perception of meaning. In description (1) it is assumed that in the postcentral part of IK-3 the relevant feature is the presence of the non-prominence-lending fall, and that the attainment of the low reference-line is the automatic consequence of making this fall. In description (2) it is assumed that the attainment of the low reference-line is the relevant feature, and that the non-prominence-lending fall is the predictable movement to implement this feature. In Keijsper (1980, 217) I opt for alternative (2) on the basis of a comparison with other contours, e.g. IK-1: ; in the latter contour there is no non-prominence-lending fall, but, so it is assumed, its postcentre is nevertheless felt to be the same as the postcentre of IK-3; thus, the presence of the non-prominence-lending fall in IK-3 is not perceived as a semantically relevant feature of the postcentre, while the attainment (in IK-3) or the maintenance (in IK-1) of the low

reference-line is perceived as such. This feature will be abbreviated as 'low postcentre', the opposed feature as 'high postcentre'. This decision determines the preliminary classification of contours. For example, IK-3 is now grouped with IK-1 for its postcentral part.

The second decision consists in determining whether it is now possible to describe the meaning of the segment involved. The procedure for this will be sketched in the next section. If it turns out to be impossible to define a meaning for the segment, one should either try another feature of the same segment (e.g. description (1), adduced above), or take a larger segment to which a meaning can be ascribed and then repeat the procedure. Ultimately, the analysis should result in a list of meaningful contour elements with their correlating meanings.

7. The procedure for finding the meaning of a contour segment is essentially the same as the procedure for finding the perceptually relevant pitch movements in perceptual analysis, but now on the semantic plane. The main principle is: "let the forms decide how delicate the descriptions should be". This principle prevents the arbitrary introduction of content categories and acknowledges the fact that there is less variance on the semantic level than on the interpretational level.

The raw sound material studied in perceptual analysis does not contain a criterion for deciding which pitch phenomena belong together as variants of a single perceptual unit. The investigator must therefore introduce an outside criterion for drawing the relevant borderlines. The main drawback of linguistic intonation analyses has always been that many of them took grammatical or attitudinal categories as the outside criterion for classifying the forms. However, it had not been proved beforehand by applying some independent criterion (1) that these categories exist in a discrete way, and (2) that these categories are relevant for classifying pitch events. Rather, it has repeatedly been shown that they are to a great extent irrelevant. The innovation of the IPO consists in replacing these shaky criteria by a better one, namely by letting the human ear decide the relevant borderlines. The relevance of this criterion for perceiving formal differences cannot be doubted.

The borderlines in the sound continuum having been drawn, the second phase of a perceptual analysis is concerned with replacing all pitch phenomena which are perceived to be equivalent by a single canonical, invariant form which covers all variant occurrences of the perceptual unit involved.

Semantic analysis is concerned with drawing borderlines in a content continuum. This continuum does not contain a criterion for doing so,

therefore the investigator must introduce an outside criterion which cannot be doubted to be relevant for perceiving semantic differences: the form. On the basis of opposition relations he establishes a potentially meaningful segment and lets this form decide which interpretational phenomena belong together as variants of a single meaning. In the second phase he replaces all these variant occurrences by a single invariant meaning. From the preceding argument it follows that the intonational meanings will not coincide with known categories of grammar and/or attitude: if they did, the latter could have been successfully used for classifying the forms. I fully agree with Cruttenden (1970, 187) when he says:

tunes carry an independent meaning of their own, regardless of sentence-type. [...] If correlations are found between particular tunes and sentence-types, these can be explained in terms of probable harmony between the meaning of a tune and the meaning of a syntactic pattern.

The same holds for smaller meaningful elements.

The described procedure of "one form – one meaning" is not a theoretical prejudice, but the only consistent step the investigator can take. If the ear decides that such and such pitch phenomena belong together, these phenomena must be described as such; if the form decides that such and such interpretations belong together, these interpretations must be described as such. Only in the last resort would one accept that one's ears give misleading information: that the phenomena perceived as being equivalent cannot be summarized in a single invariant form. Only in the last resort does one accept that the form gives misleading information: that the interpretations defined by the form to be the same cannot be summarized in a single invariant meaning. In both cases such a decision undermines the only outside criterion applied, so it cannot be taken light-heartedly. One would rather develop new instruments to be able to define the invariant searched for than reject as useless the only existing criterion for sameness.

As long as a semantic description of a given form does not account for all interpretations correlating with this form, the description must be rejected as insufficient. Only with this strict norm can the analysis be relied upon.

In perceptual analysis the first phase, the drawing of the borderlines in the sound continuum, is the difficult one; it is essentially a matter of intuition to decide whether a pitch phenomenon *x* must be classified as equivalent to a phenomenon *p* or to a phenomenon *q*. The second phase, the replacing of all variant occurrences of a perceptual impression by a single invariant unit is easier, for here instruments can be used. In a

semantic analysis starting with a complete perceptual analysis of contours which have provisionally been transcribed in a sequence of potentially meaningful segments, the first phase is, in principle, trivial; it consists in listing, on the basis of a reasonably large amount of utterances, all interpretations (not necessarily discrete) correlating with a segment. Now the second phase, the replacing of all interpretations by a single invariant meaning, is the delicate one; it is essentially a matter of intuition to decide whether one must formulate a meaning *p* or a meaning *q* in order to account for a given interpretation *x*. It can happen that two trained listeners disagree on a given pitch phenomenon *x*: is it equivalent to *p* or to *q*, or must a new unit be set up for it. But such cases are marginal; in principle, intersubjective agreement is possible, otherwise language could not function as a communication system. It can happen that two semantists disagree on a given interpretation *x* of a certain form: must a description *p* or a description *q* be chosen to account for it, or must a larger contour segment be taken as the minimal meaningful one. In principle, however, intersubjective agreement is possible, otherwise language could not be used to convey information.

8. It will be clear that semantic analysis along these lines is a time-consuming enterprise. This article does not present a finished analysis. It contains elements of the different steps discussed (the steps are in practice, of course, interwoven). The problems concerning the forms of Russian pitch contours which are to be dealt with in perceptual/instrumental analysis are chosen to be the problems the solution of which can help to establish the linguistic opposition relations between (the forms of) the contours. These problems are not necessarily the most interesting ones from a phonetic point of view. As indicated above, the opposition relations define the potentially meaningful contour segments. Where this is possible on the basis of the known facts it will be explored whether these segments are indeed meaningful: an attempt will be made to define a meaning for them. There is one case where it can, with some confidence, be said that a larger segment than the smallest possible segment must be taken to be the minimal meaningful one; this case is discussed in Part I, Section 10. In Part II the decision arrived at is considered to be correct; Section 10 of Part II again discusses the decision.

The formal characteristic of a contour segment which in a certain phase of the procedure is supposed to be meaningful is placed in apostrophes (' '). The preliminary formulation of its meaning is also caught in single quotation marks; the formulations should be read as working hypotheses to be amended and to be more extensively exemplified in a later phase.

Indications in double quotation marks (" ") have no theoretical but only a mnemonic status.

9. The study of the so-called Functional Sentence Perspective is concerned with the distribution of accents over, and the linear arrangement of, sentence elements. The meaningful option in prosodic arrangement (accentuation) is, in my view, the choice between making and not making a sentence element prominent. The elements of a sentence correspond with elements of the mental image evoked by uttering the sentence. I shall use the name '(separate) thought' for the individual elements, and the terms '(complex) thought' or 'projection (as a whole)' for concatenations of thoughts.

Prominent or not, the elements spoken are present in the sentence, thus the separate thoughts are present in the projection as a whole. It is still an open question how the meanings '— prominence' and '+ prominence' must be formulated precisely. But it can be shown that at least the following holds true: a sentence element which is not prominent corresponds with a thought which is merely present at the given moment in the stream of information being conveyed (in the projection as a whole); a sentence element which is prominent corresponds with a thought which is not only present, but of which the speaker also conveys the fact that it is present, i.e. that it could have been absent at the given moment in the stream of information being conveyed. If a thought is absent there can, but need not, be another thought which enters the same slot in the stream. For example: *they love each other, but there is no love-affair*: the thought 'love-affair' is opposed to 'love', without another thought instead of 'affair'; the same accentuation can be used to oppose 'love-affair' to, e.g., 'love-song'.

The interpretation of '+ prominence' and '— prominence' depends on a number of factors. Important is that a given sentence element can fall inside the "scope" of an accent on another sentence element. For example, in the phrase *long hair* the element *long* falls inside the scope of the accent on *hair*: if 'hair' is absent, the thought 'long' is, in the so-called "neutral" reading, also absent; the meaning '— prominence' of *long* applies only given the presence of 'hair': given the presence of 'hair', 'long' is not opposed to, e.g., 'short' (cf. *long hair*); in contrast, *hair* does not fall inside the scope of an accent on *long*: in *long hair*, 'hair' is present whether or not 'long' is present.

Every sentence contains a so-called "Rheme" ("the thing said"). A (complex) thought becomes a so-called "Theme" ("the thing spoken about") if the sentence element involved (1) does not fall inside the "scope" of a following accent, and (2) does not carry the last accent of

the sentence. Compare, for example, the following sentences: *William* ("Rheme"); *William* ("Theme") *fell asleep* ("Rheme"); *William fell asleep* ("Theme") *at 8 o'clock* ("Rheme"). I shall use the following formulations: '(thinking of the world as it is at this moment) I think: 'William''; 'thinking of William I think: 'fell asleep''; 'thinking of the falling asleep of William I think: 'at 8 o'clock''. See further Part II, Section 1 and Keijsper (1983).

The meaning '+ prominence' occurs without further specification if accents exist which cannot be recognized as a particular type of pitch accent, and possibly in one type of pitch accent (see Part I, Section 10). In other pitch accents the meaning '+ prominence' (as opposed to '- prominence') is combined with the meaning of the particular type of pitch accent used (as opposed to the other types of pitch accent in the language studied). This description of a pitch accent as establishing an opposition along two dimensions is meant to account for the fact that accentuation (absence versus presence of prominence) is perceived as a phenomenon different from intonation, although it has repeatedly been shown that pitch, which is intuitively thought of as an intonational phenomenon, is also the main cue for the perception of prominence.

In this article I shall not discuss the opposition '+ prominence' versus '- prominence', but only the oppositions between the different types of pitch accent (which all contain '+ prominence'). As a consequence of the opinion formulated above, that "Theme" derives from "Rheme" plus "scope", I hold the view that the semantic description of a pitch accent must cover all occurrences of the pitch accent and not only the sentence-final occurrences.

The type of pitch accent used to make *x* prominent specifies, in my view, how the speaker perceives the relation between (1) the absence/presence of the thought '*x*' in the stream of information being conveyed at the moment of speaking, and (2) the absence/presence in the world of a referent of thought '*x*'.

10. As an example of the type of analysis advocated here, I discuss in this section the Dutch pitch accent rise & fall ( ) . This accent can be generated by combining in one syllable rise 1 and fall A: 1 & A. The IPO-descriptions regard the contours (0...010... 0A0...0) and (0...01 & A0...0) as two variants of the same pattern (the "hat pattern"); the latter is to be chosen if there is only one syllable to be made prominent. In Bryzgunova's description of Russian intonation the same is implied by labelling some sentences involved in the

same way, for example, IK-2 in questions with a question word for both and . In the former contour "the intonation centre, as it were, splits between the question word [...] and the last word" (Svetozarova 1978, 177). Such a view implies that the whole contour is surveyed before the first accent is analyzed. A linguistic analysis of contours must, in my view, concentrate on the sequence of meaningful options which the speaker is implementing from left to right.

Now, a syllable containing 1 & A has one pitch accent, not two, so 1 & A certainly does not mean 'a pitch accent 1 plus a pitch accent A'. This precludes describing a rise & fall linguistically as the combination of rise 1 and fall A.

First, the opposition relations must be established. On the basis of 't Hart (1979a) I would propose the following.

(a) Although 't Hart (*op. cit.*) distinguishes between the transcriptions 1 & A and 1 & B, there is, following the same publication (p. 21), only one type of pitch accent rise & fall.¹

(b) Rise 1 does not occur if 0...0 immediately follows, and 1 & A/1 & B does not occur if 0...0 immediately follows.

(c) If contours are analyzed from left to right, (b) says: 1 already signals that the postcentre will be high, and 1 & A/1 & B signals that the postcentre will be low.

(d) So one can read 1 as 'rise plus high postcentre', and 1 & A/1 & B as 'rise plus low postcentre'.

(e) The contour 10...0A then reads 'rise plus high postcentre' (for 1) 'plus fall' (for A); the contour 1 & A/1 & B reads 'rise plus low postcentre'.

(f) As the choice between a high and a low postcentre is made during the prominent syllable by the type of pitch accent, the postcentral part can be absent without the opposition between 1 and 1 & A/1 & B becoming neutralized, i.e. the attainment of the reference-line involved is enough to implement the option.²

The elements 'rise' 'fall' 'low postcentre' 'high postcentre' are now potentially meaningful.

Next, an attempt is made to define a meaning for these elements. As both 1 and 1 & A/1 & B contain the element 'rise', their meanings should partly coincide and differ in the same way from 'fall'. So, in order to account for the different sets of interpretations correlating with 1 and 1 & A/1 & B, the difference should be ascribed to the difference between 'high postcentre' and 'low postcentre'.

This is one line of investigation, the line directly suggested by the formal opposition relations. This analysis assigns an equal status to all types of pitch

accent. Although it cannot yet be excluded that such an analysis is possible, I tend to reject it. My hesitations concern:

- (1) the partial identity of 1 and 1 & A/1 & B ('rise') in this analysis;
- (2) the heavy semantic load which must in this analysis be assigned to 'high postcentre' versus 'low postcentre', and
- (3) the different meanings which must be assumed for the Dutch and the Russian rise & fall (in view of the fact that Russian has another contour consisting of a rise plus a low postcentre).

Another line of investigation seems to be more promising. In this alternative description the pitch accent 1 & A/1 & B is not decomposed into two elements ('rise' and 'low postcentre'); that is, the minimal meaningful element is taken to be larger than the minimal possible one. The pitch accent 1 & A/1 & B is chosen as a primitive, and the pitch accents 1 and A are described as being, in different ways, non-rise & fall's. Thus, while the notation 1 & A suggests that the accent be analyzed as 'rise plus fall', and while the notation 1 & B suggests that it be analyzed as 'rise plus low postcentre', it is probably more adequate to say that 1 and A lack something of 1 & A/1 & B. The same suggestion is made by Van Buuren (1981, 7).

This alternative view can also be derived from the IPO-research. In this research the rise & fall occupies a special position. It has experimentally been found (e.g., Van Katwijk 1974) that a rise & fall is, so to speak, physiologically the most natural way to make a syllable prominent. Furthermore, the IPO-approach at present does not allow for accents other than pitch accents: all occurrences of prominence are transcribed as pitch accents, or, rather, only prominence which is lent by pitch is transcribed.

Now, when you try to write down the intonation of a spoken text, you are confronted with cases of unclear prominence; these cases are mainly non-final accents of sentence(part)s (see also Van Buuren 1980, 6). With the IPO-investigations in mind, the decision to transcribe a given occurrence of unclear prominence as rise & fall is essentially negative: the accent you presume to hear is certainly not of another type, so, assuming that it is a pitch accent, it must be a rise & fall; or: you hesitate to call the syllable prominent because you cannot recognize the prominence as a pitch accent (cf. Boves and ten Have 1980, 149-150; 't Hart and Van Katwijk 1969; 't Hart 1974; 't Hart and Collier 1979; 't Hart 1979c; for Russian: Ivanova-Luk'janova 1971; Rozanova 1979).

This raises the question whether a difference exists between '+ prominence' and the meaning of a rise & fall. If one regards a rise & fall as an exceptional type of accent instead of an equal mate to other pitch accents,

the closeness or identity of prominence *per se* and rise & fall can probably be satisfactorily accounted for. A prominent sentence element, so it was surmised in the preceding section, communicates the presence of the thought involved in the stream of information. One basic relation between a thought and the outside world seems to be that the presence of a thought is communicated in order to communicate the presence in the world of something (an entity, situation, property, etc.) correlating with the thought, i.e. the presence in the world of a referent of the thought. This relation can be established by a rise & fall. Other pitch accents can be defined as denying, for one reason or another, this relation. The question whether a rise & fall is only the expression of '+ prominence' or also a particular type of pitch accent, or sometimes the former and sometimes the latter, amounts to asking whether a rise & fall communicates only the presence of a thought in a larger projection (without separately relating the thought to the world), or also the presence of a referent of the thought in the piece of the world projected through the larger whole, or sometimes the former and sometimes the latter. The last alternative is for the time being the safest one. It must then be added that, when a word carries the last accent of a sentence (or, in some cases, a sentence part), the (complex) thought involved necessarily relates to the world; in this case a rise & fall necessarily communicates, besides the presence of the thought, the presence in the world of a referent of the thought. If this is correct, the two readings of a rise & fall (as the expression of '+ prominence' and of a particular relation to the world) can be summarized in a single formulation, namely in the following way. All pitch accents other than rise & fall's relate the thought to the world; they say that the presence in the world of a referent of the thought is not communicated. The special character of a rise & fall is, presumably, that the accent does not signal whether the thought relates to the world: the accent does not say that the presence in the world of a referent of the thought is not communicated.

This formulation allows for two interpretations:

- (1) a rise & fall does not communicate anything about a referent in the world (does not relate the thought to the world);
- (2) a rise & fall communicates the presence in the world of a referent of the thought.

The latter interpretation must be chosen when the thought necessarily relates to the world, i.e. when a rise & fall is the last accent. In Part II I shall be concerned with a rise & fall in sentence(part)-final position, i.e. with interpretation (2).

PART II

1. *IK-1 versus IK-2*

The contours which are labelled IK-1 or IK-2 in Bryzgunova's system have in common that the last or only pitch accent contained in the contours is not of the "interrogative" type (IK-3) and that the part of the contours following this accent is spoken on the low reference-line. A constant formal difference between (the last accent of) IK-1 and IK-2 cannot be defined on the basis of a comparison between the transcriptions in the book (1977) and the contours spoken on the records. One of the reasons for this is that the labelling of the sentences in the book reflects the presumed "grammatical" and "attitudinal" functions of the sentences, independent of the forms of the contours. The labelling is basically the following.

(a) Sentences with a *wh*-element (*kto*, *čto*, *gde* etc.) and with the word *ili* ('either – or'), if these sentences are meant as

"statement" : IK-1,

"question" : IK-2,

("exclamation": IK-5).

(b) Other sentences, if these are meant as

"neutral statement": IK-1,

"contrastive", "emphatic statement", "exclamation": IK-2.

The most recent description of the formal difference between IK-1 and IK-2 is the following (Bryzgunova 1980a, 97–98):

IK-1: "on the central vowel the tone falls [...]" ;

IK-2: "on the central vowel the movement of the tone is level or falling, the word stress is strengthened [...], and this differentiates IK-2 from IK-1".

Further (Bryzgunova 1978, 22),

the central vowel of IK-2 is characterized by a strengthening of the word stress on the score of the greater distinctness (*otčëtliivost'*) of the timbre [than in IK-1], which can be greater than, or the same as, the distinctness of the timbre of the stressed vowels in the precentral part [of IK-2]: essential is that the borderline between the greater and lesser distinctness of the timbre of the stressed vowels takes place after the centre in IK-2, and before the centre in IK-1.

This definition, together with the practice of "functional" labelling, can hardly fail to make the reader sceptical about the existence of two discretely different contours.

Other authors take another parameter than timbre to define two contours. For example, Svetozarova (1975, 505) stylizes:

This is unambiguously the difference between a merely falling pitch accent and a rise & fall.

Kuznecova (1960, 43–52) can be interpreted in the same way; the second type is defined by the fact that in the first half of the syllable the tone must be kept on a high level, while to the end the tone falls (*op. cit.*, 51).

Some of Bryzgunova's statements hint at the same formal difference. She says, for example in (1980a, 107), that the falling movement of IK-1 takes place on a level which is lower than the precentral part, while in IK-2 it remains in the range of the precentral part or reaches an inconsiderably lower level. That is: $\dots$ versus $\dots$, which stylizes vs , for, in order to fall from a higher level, the tone must first be raised (compare Collier (1972, 180–181), who stylizes Pike's 3-2-4 as).

In the publications of Bryzgunova, the difficulty in defining a formal difference between the two contours has several sources. In the first place, the definitions refer only to the central vowel, while it is necessary to take into account also the preceding fragment: "a rise of standard dimensions (ca. 3 semitones in 100 msec) should start at ca. 50 msec before (! C.K.) the onset of the vowel in order to lend prominence to a syllable" (Van Katwijk 1969, 70; this is for Dutch, but the situation in Russian is probably not very different). Consonants preceding the vowel can, of course, be voiceless, so that there is no measurable pitch; but virtual rises are only a problem for instruments, not for human perception (for a preliminary rule to transcribe virtual rises in actual rises see Boves and Ten Have 1980, 145–146).

Bryzgunova sometimes stylizes in "British style", that is (e.g. Ladd 1980, 19), she takes the pitch movement that begins with the central syllable as defining a contour. But on this point the different stylizations are easily translatable.

The second source of the problem is the practice (see Part I, Section 10) of assigning to both (two pitch accents) and (one pitch accent) the symbol IK-2 (in some types of sentences); the symbol is placed on the syllable with the last pitch accent. But the last pitch accent of the contour with two accents can both be merely falling and rising & falling (); the latter distinction cannot be transcribed then.

The third source is more serious. From Bryzgunova (1963) on, there are two conflicting points of view on the relevant borderline between the contours under discussion. The first tendency is to describe the difference as (IK-1) versus (IK-2) (in somewhat confusing terminology, but recognizable). The second tendency is to regard the direction of the pitch movement as irrelevant (e.g. Bryzgunova 1963, 173-174, 176-178, 199, 225-226). The latter tendency follows the line of, e.g., Jurgens Buning and van Schooneveld (1961), who, under the label "emphasis", group together both rise & fall's (*op. cit.*, 73-77: preictic rise, postictic fall to the tonic - "contrastive emphasis" -) and extra-deep falls (*op. cit.*, 77-79: preictic fall to the tonic - "affirmative intonation" -). It is this tendency which has ultimately led to definitions which take timbre distinctions to be decisive. Finally, the not quite perfect correlation between book and records as a consequence of the "functional" labelling does not help much to keep the distinctions clear.

In order to avoid further confusion I shall use, instead of IK-1 and IK-2, the names "type 1 contour" and "type 2 contour" when the (stylized) contours resp. are meant.³

In the perceptual/instrumental analysis of this opposition attention should at least be paid to the following pitch phenomena (where necessary, prominent segments are placed between vertical strokes):

(1) The (probably) canonical realizations (fall) and (rise & fall).

(2) The realizations and mentioned above (without measurable pitch in the fragment preceding the fall).

(3) The realization of type 2 mentioned by Kuznecova (*op. cit.*, 43-52): a late fall (i.e. considerably later than ca. 30 msec after the vowel onset, where a merely falling pitch accent starts ('t Hart 1979c, 21; for Dutch)), with a level high pitched fragment preceding it:

(4) A level low pitched syllable preceded by a level-changing fall ( ) is being referred to as a realization of type 1 (e.g. Nikolaeva 1977, 82). The opposite, or , is more problematic: is this a realization of type 2 or of IK-3, or a neutralization? (cf. Boyanus 1955, 99; Bryzgunova 1963, 199; Bryzgunova 1977, 200; Jurgens Buning and van Schooneveld 1961, 35-36, 73-77).

(5) A typical feature of Russian is the presence of a so-called "zanos" in the syllable preceding the one with a fall of type 1: (e.g. Kuznecova *op. cit.*, 47); Jones and Ward (1969, 227) mention the possibility of a "kick-up" in the prominent syllable itself: (cf. 5 & A in the IPO-system). Is this a type 1 or a type 2?

(6) 't Hart and Collier (1971, 5) report that rise 5 is "perceptually

different from the irrelevant 'micro intonation', which also manifests itself as a small pitch rise in the beginning of the syllable that bears the final fall". If 5 & A is a type 2, where lies the borderline?

(7) A rise & fall on a level lower than the precentre ( ) is mentioned by Bryzgunova (e.g., 1977, 197) as a realization of IK-2; I think rather that it is a type 1 (compare (4), with "micro intonation" on the low level).

The real problem now is, of course, to find a criterion for classifying the problematic forms (also, e.g., 1 & A, 1 & B, 5 & A in Dutch). One might propose to test their perceptual equivalency with the canonical realizations. As long as all investigators involved understand this notion in the same way, there is no problem. But the literature on the two "non-interrogative" accent types of Russian amply shows that intersubjective agreement can hardly be expected here. One might propose to let "naive" speakers decide in this matter. One can, for example, conduct an experiment with a hundred "naive" speakers, asking them to judge as equivalent or non-equivalent the realizations: , an "extra-deep" fall, a rise & fall, and a "normal" fall. It is not improbable that they will group together the first three. But would such an outcome prove that these three are indeed equivalent? In my view, it would only prove that "naive" speakers perceive that all three forms are, in one way or another, more "emphatic" than a "normal" fall. Only if it is assumed that emotional categories are relevant for classifying pitch events is the hypothetical outcome of the experiment convincing. In this sense, the warning of Van Dooren and Van der Eynde (1981, 6) against what they call "laboratory fetishism" is not totally unwarranted. My point is that the IPO-adage "let the ear decide" is, ultimately, the same as "let the meaning decide", because one's ability to judge on borderlines in the formal plane is based on implicit knowledge of semantic borderlines. In my view, the IPO-analyses use, implicitly, semantic intuitions, although these are called perceptual intuitions for reasons which are understandable in the context of the history of intonation analysis. The analyses differ from other analyses in that the intuitions are used in a correct way, namely unbiased by preconceived opinions on the outcome of the analysis. In short, I think that one must, in controversial cases, first describe the meaning of clear-cut realizations of contours, then devise a test deriving from the description, and then let the outcome of the test decide about the classification of borderline-realizations. To be sure, this test does not then prove that the classification is correct, for the procedure is circular. The test says only: with such and such an hypothesis on the meaning of this contour the formal borderlines are such and such. The correctness of the analysis cannot be proved, it can only be made plausible.

By making or not making a sentence element prominent, as argued above

(Part I, Section 9), the speaker conveys whether or not he communicates the presence of the thought involved in the stream of information. The same opposition is, in my view, repeated on the level of the world by type 2 versus type 1. With both types a referent of the thought is, in the opinion of the speaker, present in the world. But only with type 2 does the speaker convey the fact that the thing (situation, etc.) referred to is present, i.e., that the thing, in his perception, could have been absent in the world at the given moment (if the thing is absent there can, but need not, be another thing in its stead). With type 1, the referent involved is projected as being merely present in the world, but the presence of the referent is at the given moment not opposed to the absence of the referent. Thus, using a type 1, the speaker conveys: (1) that the referent is, in his perception, present in the world, and (2) that he does not think of the presence itself. From this it follows that the speaker (says that he) was already aware of the presence of the referent before the moment of speaking, for if he knows that the referent is present, and this knowledge is not acquired at the moment of speaking, the knowledge must have been acquired earlier. So type 1 conveys, besides '+ prominence' ('I communicate the presence of this thought'): 'I do not communicate the presence in the world of a referent of this thought because this presence has already been projected before this moment'.

In contrast, a type 2 contour communicates, in any case if it is the last accent (see Part I, Section 10), not only the presence of the thought at the moment of speaking ('+ prominence'), but also the presence in the world of a referent of the thought. One can become conscious of the difference by using a type 1, for example, to report about sudden events: *Smotri, Ivgu padaet iz okna* (*Look, John is falling out of the window*). The effect of a type 1 on *okna* (*window*) is comical, or the type conveys utmost resignation. The contour says: "by the way, I forgot to tell you, ...", "I did not think of it, but now that I think of it, I realize that I already knew that John is falling out of the window". Obviously, such events are more apt to be reported with a type 2 contour, because in that case the speaker says that he becomes aware of the existence of the event at the moment of speaking. Therefore, type 2 makes the impression of an "exclamation" intonation.

Another basic type of example is the following. Imagine that you are going to read a story to a child. You leave the choice of the story to the child. The child finds one in the book, you look, and say: *Sneguročka*, with a rise & fall. Then you take the book and start reading aloud. First you read the title: *Sneguročka*, with a type 1. In the first case you are conveying a thought of the presence at the moment of speaking of the referent *Sneguročka*; in the second case you are merely evoking the thought of the referent involved but not of its presence (you already knew it was

there). As intonation is not dictated by the context, the examples can be reversed. You look which story the child has chosen, and say: *Sneguročka*, with type 1. Now you are saying something like: "even if I had not been looking I would have known that you would choose *Sneguročka*, you always do"; a merely falling pitch accent sounds rather disappointed or reluctant here. In contrast, if you start reading the story aloud and use for the title a rise & fall, you sound somewhat overenthusiastic: "listen, what a surprise, here is *Sneguročka*".

The definition of type 1 implies that this contour has something in common with '— prominence', but on another level. This fact has been mentioned in regard to other languages, namely in statements to the effect that a merely falling accent is less "new" than a rise & fall. For example, Van Buuren (1980, 4; 1981, 7) calls type 1, for Dutch and English, 'expective', which stands for: 'the topic is presented as if to be expected, no other alternatives suggesting themselves'; Van Dooren and Van den Eynde (1981, 15–16) say for Dutch that a "low tone" (here: fall) presents the element as relevant but not necessarily new. The same holds, in my view, for Russian. A type 1 contour conveys "new" information in the sense that the speaker introduces a thought at the moment of speaking (i.e. he says that the thought could have been absent), but it conveys "given" information in the sense that the speaker says that he already knew that the thing is there before he thought of it.

To be added to this definition is an explanation of the fact that a type 1 contour marks the end of a "sentence".⁴

The explanation will come from Functional Sentence Perspective. Consider the sentence *John works*. The accent on *works* communicates the presence of the thought 'works'; the thought 'works' is being concatenated to the thought of John at the moment of speaking: the complex thought 'John works' is being formed at the moment of speaking ('thinking of John I think: 'works)'), 'works' is "Rheme". Now we take a longer sentence, e.g. *John works in an office*. The addition of a prominent element has an effect on the interpretation of the part *John works*: the illusion is created that the concatenating of 'works' to 'John' has taken place before the sentence was uttered, that the complex thought 'John works' has already been formed. The thought 'works' now belongs to the "Theme": 'thinking of John's working I think: 'in an office''. Again, the accent on *works* communicates the presence of the thought 'works'; but if the thought were absent at the moment of speaking, the projection 'John works' would nevertheless belong to the permanent set of projections of John in the mind of the speaker; the accent marks the act of selecting 'John works' from among preexisting projections of John with different properties.⁵ In contrast, when

the accent is the final one, the accent marks the act of concatenating 'works' to 'John'. In current theories on Functional Sentence Perspective this "push down effect" in accentuation is mistakenly being ascribed to the influence of the preceding context: it is being attempted to show that the part 'John works' of *John works in an office* indeed already belonged to the 'fund of knowledge', which results in circular arguments.

The effect described is essential for the understanding of intonation. In "Rhemes", there is a separate awareness of the projection conveyed and the world as it is (which is, logically, also a projection, but in the "naive" vision which lies at the root of natural language the world exists in a certain way independently). Consider the "question" *John works?* A particular type of pitch accent can convey, for example: 'thinking of John I think: 'works'', but I do not assert that there exists in the world an act of working (or: that the piece of the world projected is indeed an act of working)'. The thought 'works' is (tentatively) being attached to a piece of the world. Now, in "Themes", a formally identical pitch contour must be interpreted in a different way, because a borderline between "what I think about the world" and "how the world is in reality" no longer exists. As indicated by the expression 'thinking of John's working I think: ...', the piece of the world projected in 'works' is an act of working, the thought has already been attached to the piece of the world involved, 'working' is the name of this piece.

A type 1 contour marks the end of a "sentence" because here the type of accent itself has already a "push down effect". From the information contained in type 1 that the projection concerns something already known to be present in the world it can sensibly be inferred that the speaker conveys this information in order to make clear that this information will not be conveyed by the presence of a further accent, i.e. that there will be no further contribution to the same complex thought. The element "choice from (preexisting projections)" is absent in final accents, also in type 1 (i.e. the appropriate formula remains: '(thinking of *x*) I think 'y'', not: 'thinking of *y*').

The problem with classifying borderline-forms may well be that some realizations of a rise & fall may mark it as the "last" accent (e.g. 5 & A) while the accent keeps having the meaning of a rise & fall; it can be said then that such realizations are unambiguously pitch accents (see Part I, Section 10), i.e., that they relate the thought to the world. A test could be proposed which uses the notion "last accent" for eliciting intuitions of "naive" speakers (the test sentences must be chosen very carefully in order to avoid syntactic side-effects); such a test could be used to establish the borderline (if any) between "rise & fall as prominence" and "rise & fall

as pitch accent", but if such a borderline exists this test cannot be used for establishing the borderline between rise & fall and fall.

2. *IK-2 versus IK-3*

In Part I, Section 10 the opposition between the Dutch contours (10...0) and (1 & A/1 & B) has been discussed. One of the major differences between the Russian and Dutch systems of intonation is that the Russian contour (IK-6) has not one but two partners with a low postcentre: type 2 ( ) and IK-3 ( ). If it is assumed for Russian, as for Dutch, that a rise & fall cannot be decomposed in smaller meaningful elements, the contour IK-3 is uniquely identified by 'rise plus low post-centre'.

Svetozarova (1975, 505) stylizes the difference between type 2 and IK-3 as follows:

This difference cannot be accounted for in the way the Dutch 1 & B versus 1B can (Note 2).

The "question intonation" IK-3 is notoriously difficult to pronounce for foreigners. Although the tone in the prominent syllable is often raised to a very high level, it is in the system not the height which constitutes the defining feature of the contour but the fact that the tone does not reach the low reference-line during the prominent syllable. Dutch students tend to pronounce a (high) rise & fall, in accordance with their native language realization of a rise with a low postcentre (cf. Bryzgunova 1963, 246-247).

The main problems to be attacked by instrumental means are the following.

(1) Although the pitch accent of IK-3 is in the system a merely rising accent, the prominent syllable can phonetically contain a falling last fragment. Boyanus (*op. cit.*, 118) mentions this fact as a non-essential feature in the "intensive stress" realization; Jones and Ward (*op. cit.*, 225) call it "accidental"; Nikolaeva (1977, 83) mentions it for the use of IK-3 as a "continuation contour", but only for the case when there are no postcentral syllables, for the "question" interpretation in the same position it is not mentioned (*op. cit.*, 84); Wenk (1970b, 183) ascribes it to the influence of the following consonant(s).

In view of the existence of type 2 the exact tolerance-boundaries of the falling fragment should be defined. The IPO-experience induces to search for a definition of the location of the top of the rise with respect to the vowel onset (Collier 1970a, b; Van Katwijk and Govaert 1967). This question is further important for establishing whether the opposition between IK-3 and IK-6 is (can be) implemented during the prominent syllable.

(2) Wenk (1970b, 182-183) mentions that the height of the accent is attained by an initial upward jump to the begin of the actual rise: , stylized: . But (Wenk 1970c, 220) the absence of a great initial jump (a rise which is not high enough) is not essential for the recognition of the type, although it makes a "foreign" impression. Nikolaeva (1977, 84) mentions that IK-3 when used as a "question" intonation is twice as high as when it is used as a "continuation". See also Section 3 below for IK-6. It should be investigated whether IK-3 can satisfactorily be described with an (essentially) two-level approach as the IPO-approach to Dutch.

(3) Bryzgunova sometimes labels a pitch accent "2³", i.e., in between IK-2 and IK-3. There are probably circumstances where the difference between the two contours becomes inaudible even for a native speaker. Some circumstances to be studied are: IK-3 not high enough (see (2)), high speaking rate (see Note 2), absence of (voiced) consonants after the prominent segment, rise of IK-3 not steep enough (compare Galëeva and Sokolova (1975, 220): the central vowel of IK-3 tends to be relatively short, even shorter than the precentral vowel).

(4) As mentioned in Section 1 above, a high level pitched syllable followed (and preceded?) by a level-changing fall (resp. rise) is a realization yet to be classified.

The words of a sentence indicate which thoughts are present in the stream of information being conveyed. Their pronunciation with or without an accent conveys whether or not the presence itself of the thoughts is communicated. This opposition exhausts the possibilities on this level (but see Section 8 below): the thoughts are present anyway, because the words are present.

The contours of type 1 and type 2 convey different information about things which in both cases are, in the opinion of the speaker, present in the world (whether or not the presence itself is communicated at the moment of speaking). This opposition does not exhaust the possibilities, for one can also have thoughts which have no referent in the world. IK-3, just as type 1, does not communicate the presence in the world of a referent of the thought, but, in contrast to type 1, IK-3 does not communicate that a referent is nevertheless present in the world.

For the time being I assume that IK-3 is the only Russian contour which

does not specify the reason for not communicating the presence in the world of a referent of the thought (compare type 1: because this presence has already been projected earlier). In the "question" interpretation of IK-3 the reason for not communicating the presence of a referent is obviously that the speaker does not know whether or not there is a referent of the thought in the world. But the element 'because I do not know' does not belong to the meaning of IK-3, for the contour is also used to indicate the "očevidnost' dlja vseh kakogo-libo fakta" (Šustikova 1970, 54) (the obviousness for everyone of some fact). In this case the speaker does not convey whether or not there is a referent of the thought, for example because he wishes to draw attention to the triviality of saying that there is a referent. As only the context can make clear which interpretation must be chosen, Russian does not have a question intonation in a linguistic sense.

As IK-3, in contrast to type 1, does not convey why the presence in the world of a referent of the thought is not communicated, the contour occurs as a non-final contour ("continuation" interpretation). In that case the (complex) thought involved is most often "pushed down" (made into a "Theme") by the next accent(s), so that the IK-3 part of the sentence is now interpreted to refer to something of which the presence in the world is not communicated because this presence has already been projected earlier (as is type 1 by virtue of its own meaning; IK-3 only leaves open the possibility, to be effectuated in non-final occurrences). Incidentally, a concatenation of IK-3 and type 1 is used in "questions"; the IK-3 part of the sentence is not a "Theme" then (it falls inside the "scope" of the type 1 part of the sentence).

Before a more definite formulation of the meaning of IK-3 can be given, the following problem must be solved.

The position of the peak of IK-3 in a sentence meant as a "question" is often different from the position of the peak in the Dutch counterparts of the sentences involved (with 1, 1 & A/1 & B, A, etc.). Wenk (1970a) calls attention to this phenomenon with regard to the German and Russian languages. The Dutch "question": *Leest hij boeken?* (Does he read books?) can be interpreted in two ways:

(1) does he read books or does he do something else (or: does he read something else)?

(2) does he read books or does he not read books?

The Russian sentences: *On čitaet knigi?*, with the peak of IK-3 on *knigi* (books) has, as far as I know, only interpretation (1): the sentence means that the piece of the world of which 'čitaet knigi' is a projection exists, even if the projection 'čitaet knigi' is not the correct projection. For example, he has an unidentified hobby which is either reading books, or swimming,

or collecting stamps, etc. In order to oppose reading to the absence of reading (without implying the presence of another projection of the same piece of the world), the peak of IK-3 must be placed on the verb: *On čitaet knigi?*; but this sentence is not equivalent either to the Dutch sentence with an accent on the object: this Russian sentence means that the thought 'books' has already been introduced. In order to "translate" interpretation (2) (does it happen that he reads books?) in Russian, the best choice is: *Knigi on čitaet?* or *On knigi čitaet?*, with two accents, the latter of which is IK-3. The two thoughts 'knigi' and 'čitaet' are here introduced separately; the Dutch sentence with one pitch accent on the object introduces them as a complex (that is: 'leest' falls inside the "scope" of the accent on *boeken*).

This difference between Dutch and Russian is probably caused by the different meanings of the types of pitch accent involved (there is no reason to assume that accentuation has a different meaning in the two languages, but another factor may be the different function of the verb in making a sentence positive or negative; further, the meaning of word order may play a part, cf. *On knigi čitaet?*). Take, for example, the Dutch contour on *Leest hij boeken?* Roughly, the speaker of this sentence first communicates the presence in the world of the situation involved, and then invites the hearer to devote a thought to the picture of the world introduced: whether or not he accepts this picture. With a Russian IK-3 the speaker does not first place the situation in the world in order to ask whether it can remain there, the speaker says that he does not (dare to) place the situation in the world.

When *On čitaet knigi*, with IK-3, is the first part of a longer sentence ("Theme"), the problem disappears, because here IK-3 refers to a piece of the world which has already been labelled and which cannot be absent. For example: *On čitaet knigi, tak kak on plocho spit* (*He reads books because he is a bad sleeper*): 'thinking of the piece of the world with the property | (he) reads books |, I think: ...'.

Maybe, it is enough to define IK-3 as follows: 'I do not communicate the presence in the piece of the world projected of a referent of this thought'. The impossibility of interpretation (2) then follows from the necessity to look for a particular piece of the world (which thus must exist independently of the thought conveyed). In the "Theme" occurrences of IK-3 the piece mentioned in the definition is the piece defined by the sentence as a whole (including the "Rheme" part of the sentence).

3. IK-3 versus IK-6

While the correct pronunciation of IK-3 presents considerable problems to Dutch students of Russian, they have no difficulties with IK-6, although

the merely rising pitch accent is reported to be the same in both cases, the only difference between the two contours being that in IK-3 the postcentre is low, while in IK-6 it is high (e.g. Bryzgunova 1978, 22; Kuznecova *op. cit.*, 64; Nikolaeva *op. cit.*, 83). This is a consequence of the fact that in Dutch a merely rising pitch accent is associated with a high postcentre; IK-6 is easy then, for there the postcentre is indeed high; but for IK-3 a new combination must be acquired.

As the formal difference between IK-3 and IK-6 is well described in the literature there are only a few problems.

(1) It is often said that the rise in IK-6 attains a lower level than the rise in IK-3. For example, Svetozarova (1975, 505) stylizes:

Probably, both contours can be realized with a rise of varying size, but in IK-3 a certain minimal height may be necessary in order to ascertain the recognition (because there is also type 2 with a low postcentre). More specifically, does the changing of a type 2 (—) into — as well as the changing of IK-3 (—) into — result in an IK-6?

(2) The opposition between IK-3 and IK-6 is reported to be neutralized if there are no postcentral syllables (e.g. Bryzgunova 1980a, 107; Kuznecova *op. cit.*, 64). That is, if after the syllable with the rise pitch resumes the low reference-line, the non-prominence-lending fall in between can either be the level-changing element of IK-3 or a boundary mark following IK-6: — and — are neutralized in —. Bryzgunova (1978, 24) mentions that the prominent syllable can be lengthened in the IK-6 case. This is probably indeed a disambiguating realization (which then reads: 'rise plus high postcentre plus boundary').

(3) It would be interesting to know whether — (upward jump to a level high pitched syllable followed by syllables on the high reference-line) is a realization of IK-6.

Assuming that the rising pitch accent of IK-6 has the same meaning as the rise of IK-3, it is in Russian the high postcentre of IK-6 which specifies the reason for not communicating the presence, in the piece of the world projected, of a referent of the thought introduced by the accent of IK-6. This reason is the next (complex) thought (the semantic correlate of the next accent(s)). IK-3 does not specify the reason because its postcentre is low, which means, approximately, that the next thought is not announced (there can, of course, nevertheless be one ('continuation')).

As to the Dutch IK-6 (10...0), it is useless to distinguish here between the central and postcentral part, because rise & fall has been posited as a primitive (Part I, Section 10) and something like IK-3 does not exist; so it is in this language the merely rising pitch accent itself which announces the next thought (except in rapid speech, see Note 2).

Some common interpretations of IK-6 are the following.

(1) The speaker wishes to convey that the part (of the complex thought) introduced by the accent of IK-6 must first be concatenated to the part announced by the high postcentre of IK-6 before he takes the responsibility for communicating the presence in the world of a referent of the thought

introduced by the accent of IK-6. For example: *Jabłoki!* (*Apples!*): "I do not wish to communicate the presence in the world of apples as such, but only of a particular type of apples, the type to be specified by the next thought" (conventionally, 'good' or 'bad' must be added).

(2) The speaker does not communicate the presence in the world of a referent of the thought introduced by the accent of IK-6 because the next accent(s) will make the IK-6 thought into a thought of something already known to be present in the world (the next accent(s) will make the IK-6 part into a "Theme").

In this case the only difference with IK-3 is that IK-3 does not announce what will happen. See further Keijsper (1980, 225-227).

Van Buuren (1981, 7) calls the contour discussed 'selective', which reads: 'the topic is presented as a selection from a number of equivalent alternatives'. This definition amounts in interpretation (2) to the same as mine; but in my formulation the relevant feature is that the contour does not convey more than 'selective', namely that it does not convey that there is a topic (here: referent) which can be selected; the element 'selection' I ascribe to the effect of the (semantic correlate of the) next accent(s) (see Part II, Section 1).

The classification of contours proposed here brings under the same heading those realizations of Van Buuren's 'contrastive tonic' in which pitch does not fall during the tonic syllable because the next tonic is of the 'expective' or 'exclusive' type (*op. cit.*, 2), i.e. I propose not to distinguish between the tonic in and the first tonic in , and not to identify the first tonic in with the type . This follows from the proposal (Part I, Section 10) not to survey the whole contour before the first pitch accent of the contour is analyzed.

Except for this point, and for the fact that Van Buuren does not seem to distinguish between what is in the IPO-system rise 1 and rise 3 (Van Buuren 1980, 5), my formulations are for the canonical interpretations almost

equivalent to Van Buuren's; but he defines the meanings with respect to other projections in the mind of the speaker, while I (now; see Note 5) define them with respect to the world because this accounts for the fact that, if *x* is absent in the world, there need not be something else in its stead (see Part I, Section 9 and Note 5, but now on the level of the world). For example, Van Buuren's 'contrastive tonic' ('the topic is presented in contrast to other alternatives'), i.e. a rise & fall (type 2), says for the John-is-falling-out-of-the-window-example of Part II, Section 1 that something else could have happened to John at the given moment, while my formulation says that the given event could have been absent (in which case there can, but need not, be another event).

4. IK-6 versus IK-4

In Keijsper (1980) it has been proposed to interpret IK-4 as 'fall plus high postcentre'; the rising element of IK-4 is viewed as a level-changing movement which is made in order to return to the high reference-line after the fall: . This analysis is meant to replace that of Bryzgunova (1977), because, on the basis of the information that IK-6 differs from IK-4 in having a higher tone in the centre and postcentre (1977, 99), one would be obliged to call the difference nondiscrete and to deny the existence of two contours.

The argument is the same as for type 2 and type 1 in Section 1, above. IK-4 is reported to start rising from a level which is lower than the precentral syllable (Bryzgunova 1977, 46): ; so my proposal is to stylize: (compare: stylized as). IK-6 is: , i.e. (compare is).

While there are semantic reasons not to analyze a rise & fall as 'rise plus low postcentre' (Part I, Section 10), nothing prevents the analysis of a fall & rise as 'fall plus high postcentre'. A test to verify the formal opposition IK-6 versus IK-4 can be found on p. 216 (Keijsper *op. cit.*).

Recently I became aware that the proposed analysis is, in the context of the IPO-research, less innocent than I thought at the time, and that verifying the proposal by instrumental means is a rather urgent task. In a comparable Dutch case the IPO stylizes in another way, namely: non-prominence-lending fall plus prominence-lending rise late in the syllable (rise 3) plus high reference-line: , that is: not the rise but the fall is taken to be the level-changing movement. The two seemingly contradictory analyses are the result of different interpretations of the notion "mode" in intonation.⁶

The urgency of the problem concerns the linguistic consequences of the

alternative descriptions. In Keijsper (*op. cit.*) it is argued that IK-4 and IK-1 (type 1) differ linguistically only in their postcentres; the centre is read in both cases 'fall'. As IK-6 has, just as IK-4, a high postcentre, while the centres are different ('rise' resp. 'fall') I venture in Keijsper (*op. cit.*) a semantic description to the effect that the thought announced by the high postcentre is different in IK-4 and IK-6 as a consequence of the different pitch accent in the centre. As IK-4 has, so it is argued, a falling pitch accent, just as type 1, the thought announced by the high postcentre cannot have the function of making the thought introduced by the accent of IK-4 into a "Theme", for now the type of accent itself has already made the IK-4 thought into a thought of something previously known to be present in the world (in the formulation of this article). The crucial case for the semantic distinction between IK-6 and IK-4 as the non-final pitch accent is then that IK-6 has also an interpretation where the next accent does not make the IK-6 part of the projection into a "Theme"; therefore, a test involving "questions" is proposed (*op. cit.*, 229). Kuznecova (*op. cit.*, 60, 70-71) can be adduced as holding the same view on the "continuation" use of IK-4.

The "assertive" element in "questions" spoken with IK-4 (in comparison with IK-3) (Keijsper *op. cit.*, 228) is described by Derbyshire (1975) and Rogova (1967). The use of IK-4 in answers to questions (Keijsper *op. cit.*, 231-233) is described by Firsanova (1975, 132): "the utterance is incomplete in the series of dialogue replies, while it is formally complete". If it will turn out that my interpretation of the formal facts is impossible, the assumed semantic identity of the centres of IK-4 and IK-1 (type 1) is in disagreement with the formal facts, in which case the formal facts take precedence.

For the time being I assume that the two analyses cover the same "raw" pitch phenomena, in which case the proposed analysis must be preferred for linguistic applications.

5. IK-4 versus IK-1

In order to close the system, IK-4 must be related back to IK-1 (type 1).

A beautiful minimal pair can be heard on the records of Bryzgunova 1977 (exercise 115, sentences 1 and 2):

A včera gde vy byli? (And yesterday, where were you?): prominence-lending fall plus non-prominence-lending rise plus high reference-line (i.e. IK-4);

A včera gde vy byli?: prominence-lending fall (plus low reference-line) plus prominence-lending rise plus high reference-line (i.e. IK-1 plus IK-6).

Both sentences are presented in the book as examples of IK-4.

Besides the IK-4 problem mentioned in the preceding section the following points wait to be clarified.

(1) It has been remarked (e.g. Boyanus *op. cit.*, 104) that in IK-4 there is "generally a slight fall on each non-final stressed syllable", while in type I there is generally a descending scale of slightly rising pitches (*op. cit.*, 87). It should be investigated whether these features are essential for the recognition of the type of pitch accent (thus showing the analysis to be incorrect). I do not think they are essential, because both IK-4 and type I can be observed to occur after a rising pitch accent followed by a stretch on the high reference-line (and) in which circumstances the stresses in between the two pitch accents are known to be levelled out (Svetozarova 1975, 508–509; Svetozarova 1978, 177; described for wh-questions with two pitch accents). But it may be the case that in IK-4 (without preceding pitch accents) two declination lines must be assumed as reference-lines and in type I (*idem*) two inclination lines (see also Keijsper 1980, 234; Krivnova 1978, 135 (illustration v); Svetozarova 1975, 507).

(2) The prominent vowel in IK-4 is reported to be systematically longer than the prominent vowel in type I (Galeeva and Sokolova 1975, 220). Length may help the rise in IK-4 to lend prominence to the preceding low pitched fragment (see Note 6 and Van Katwijk 1970a).

(3) The first syllable of an utterance has its special problems. It is often difficult to determine whether or not this syllable is prominent, and a mere fall on this syllable is perceived as a rise & fall (see, e.g., Van Katwijk 1969; 1974, 153–156 for Dutch; the difficulty is mentioned for Russian by Krivnova *op. cit.*, 132). This is a consequence of the fact that "the onset of an utterance is associated with the effort of building up enough subglottal pressure to start phonation" (Van Katwijk 1969, 72); the location of the resulting rise in the first syllable is precisely the location of a prominence-lending rise, so that the initial rise is ambiguous: a meaningless side-effect of switching on to speech or a meaningful choice (Van Katwijk 1974, 153–154).

It would be interesting to know how IK-4 and type I are realized in this syllable. In IK-4 the canonical fall can probably be replaced by a low level pitch because the following rise ascertains the perception of prominence. A type I in the first syllable must probably contain a real fall, otherwise the perception of prominence is not guaranteed (a low level realization of type I is reported to occur with preceding high syllables:). This fall in type I will probably be perceived as a rise & fall, which is then linguistically

a neutralization of type 1 and type 2. I do not expect that IK-4 is realized:

(4) The opposition between IK-4 and type 1 is not neutralized if the pitch accent is located in the last syllable of the sentence: in these circumstances the rise of IK-4 takes place during the prominent syllable instead of in the next syllable (Bryzgunova 1972, 41). This situation is therefore different from IK-3 versus IK-6, which is understandable in view of the existence of type 2. But (Bryzgunova 1972, 175): "a non-abrupt lowering of the tone in the centre and postcentre of IK-1 and a weakly expressed rise in IK-4 make these contours alike" (Bryzgunova has "1⁴" here).

(5) About the implementation of prosodic boundaries in Russian almost nothing is known, so that all facts in this area must be collected. One of the questions is whether IK-4 is always followed by a boundary (or is e.g. possible?); of what type is the boundary? (e.g.

possible?); of what type is the boundary? (e.g.

(6) There exists a contour with the following properties: a low/falling central syllable plus a non-prominence-lending rise in the first postcentral syllable plus a non-prominence-lending fall in the second postcentral syllable plus a low reference-line: . This phenomenon (called "scooped" intonation, e.g., Ladd 1980, 35) is classified by Bryzgunova among the "modal realizations" of IK-2 and IK-3 (1977, 201; examples: exercise 114 sentences 8 and 10; 1980b: 233), which seems to be an unlucky guess both formally and semantically. Van Buuren (1981, 7) classifies the same phenomenon in English as a separate type of tonality, with the meaning 'exclusive', i.e., 'the topic is presented as the only possibility, excluding any other alternative'. The examples of Bryzgunova have the property that, if the part of the sentence on the low reference-line is dropped, one would

not hesitate to call the contour IK-4. For example: *segodnja on priezžaet?*

(today he comes?), compare: *segodnja* (IK-4). The sentences involved often echo identical preceding sentences and often ask to devote a second thought to the accented element (the speaker does not believe that the referent involved is present in the world). If the property mentioned is systematic,

an opposition can be proposed between *segodnja on priezžaet* and *segodnja on priezžaet*; in the latter case the IK-4 contour would then end after the first word. More examples must first be collected.

As a contribution to the comparison between Russian and Dutch it is useful to mention that in Russian there does not seem to exist something

comparable to: (A0...02). In Dutch, the last syllable creates oppositions between contours without and with rise 2 and fall C; for example: versus , versus . There is thus also an opposition between (0...010...0A0...02) and (0...010...0B & 30...0 or - see Note 6-0...10...0A & 20...0). The combination of a rise & fall with an immediately following rise (?0...01 & A & 20...0) seems unacceptable (unless there are no 0...0 syllables).

As rise 2 (not in A & 20...0, but in the non-combined occurrences) announces, in one way or another, a further thought, just as 'high post-centre' (e.g. in A & 20...0), the notion 'further thought' will have to be more specified for Dutch (the thoughts announced must be devoted to different things in the two cases).

In Russian, the last syllable does not seem to play an intonational role anywhere (but the central or first postcentral syllable can, of course, happen to be the last one). This is, next to the opposition between IK-3 and type 2, which does not exist in Dutch, the second major difference between the Dutch and Russian intonation systems.

Now, Dutch students tend to pronounce, instead of IK-4, the Dutch contour , especially when the prominent syllable is the (pen)ultimate one. For example:

Russian: *a Ivan?*

"Dutch": *a Ivan?*

This is understandable in view of the fact that the Dutch contour 0...0B & 30...0 is rather uncommon. As far as I know, the "Dutch" pronunciation of the example is unacceptable. For Dutch it does not hold true that the Russian IK-4 is identical to the "question intonation" of West-European languages. IK-4 is probably identical to the German "question intonation" (Isačenko and Schädlich (1966) describe an IK-4 - in their system a postictic rising tone switch; Wenk (1974, 192) mentions that there is no difference between Russian and German here); for English see Boyanus (*op. cit.*, 104).

Related, but different, is the observation (Bryzgunova 1963, 238; Nikolaeva 1977, 86) that Russian emigrants of the oldest generation tend to pronounce a (correct?) IK-4 in circumstances in which the present norm would favor an IK-3. On this point Jurgens Buning and Van Schooneveld (*op. cit.*) indeed give old-fashioned information. Romportl (1955, 103) grants

Boyanus the honour of having been the first to draw attention to the Russian "question intonation" IK-3 (in publications from 1935 on). It would be interesting to find out whether the use of IK-3 as the normal "question intonation" is a recent innovation.

6. IK-5

This contour consists of two pitch accents, the first one merely rising, the second one most often merely falling, with a high reference-line in between and a low reference-line preceding and following: . The symbol "5" is always placed on the syllable with the first pitch accent. The label is used by Bryzgunova in the following cases.

(1) In sentences with a wh-element which are meant as "exclamations" (compare Section 1: "questions": IK-2, "statements": IK-1).

(2) In sentences where the normally ambiguous rise in the first syllable (see Section 5) is a clearly audible rise, while not this syllable but the syllable with the falling pitch accent is lexically stressed. E.g. *záměčatel'no*

(zamečatel'no), compare *fántastíc* (fantastic).

(3) Sometimes in other exclamatory sentences.

Despite the restricted occurrence of the label IK-5, the contour involved (the "hat pattern") is very frequent. It can occur with the labels IK-1 (when the first pitch accent is not transcribed), IK-2 (idem), IK-3 (the "modal realization" with an additional centre (Bryzgunova 1980a, 103)), IK-3 plus IK-1, IK-3 plus IK-2, IK-6 plus IK-1, IK-6 plus IK-2.

The difference between IK-5 and (realizations of) IK-2 is said to be the greater length of the centres in IK-5 (e.g., Bryzgunova 1978, 22). Leaving aside the fact that this is a nondiscrete difference, it must be remarked that this is not the difference spoken on the records. When IK-5 is to be opposed to IK-2, the IK-5 sentences are spoken with two pitch accents, the IK-2 sentences with one, either of type 1 or of type 2. For example:

kakôj u nee golos? spoken:
kakoj u nee golos

kakôj u nee golos! spoken:
 (1977, exercise 43).

When IK-1 is to be opposed to IK-2 in such sentences, the sentences on the records are spoken with two pitch accents, in the IK-2 case with a

"higher hat", approximately as high as IK-5 in the "opposition" just exemplified:

kakaja zavtra budet pogoda. spoken:

kakaja zavtra budet pogoda? spoken:
(exercise 52).

Other authors (Nikolaeva *op. cit.*, 88; Svetozarova and Ščerbakova 1975, 128; Svetozarova 1978, 177–178) confirm the obvious conclusion that the interpretations . ? ! of wh-sentences are not consistently related to intonational differences. Interesting in this connection is Bryzgunova (1979), where the existence of a semantic borderline between "question" and "exclamation" is implicitly denied. It must be doubted whether it is useful for acquiring a correct Russian intonation to suggest in a course for foreigners that Russians make systematic intonational differences between the interpretations involved, when Russians in reality do not and when the described distinctions are not even consistently spoken on the records. Further, it is somewhat strange to suggest that Russians pronounce wh-sentences meant as questions and written with a question mark in a rather unnatural way: with the last pitch accent on the wh-element, e.g.

kakaja pogoda (*how is the weather*). This accentuation means that the thought of the weather has already been introduced before the moment of speaking. A far more obvious choice for a canonical example is:

kakaja pogoda (for the same point see Svetozarova 1978, 176).

When pitch contours are decomposed into smaller components the label IK-5 is redundant.

In IPO-descriptions, the term "hat pattern" is also used for more elaborate concatenations than . This practice makes it appropriate to mention here the problems concerning contour breaks.

On the formal side, the possibilities in Russian for realizing a contour break, or, more broadly, for grouping sentence elements together by prosodic means, have yet to be investigated. Probably, a non-prominence-lending fall (fall B) is a systematic means (cf. Boyanus *op. cit.*, 94–95; Kuznecova *op. cit.*, 64–66), e.g.

But a mere interruption of a reference-line can also be observed to occur.

Length seems to be the most important single cue (De Rooij 1979). The "kink-point" in (Collier and 't Hart 1970, 12) is worth investigating (especially for IK-4:). Further, rhythm comes into the picture here.

On the semantic side, the main questions are whether the different ways of realizing prosodic groupings have the same meaning and which meaning is conveyed by the presence and the location of a boundary. For those who wish to attack the latter problem in Dutch, they can have recourse to material already available (e.g. Collier and 't Hart 1975; 't Hart 1975, 1979a); but the problem in Russian is even greater, because in Russian more often than in Dutch non-syntactic "sense-groupings" occur. For example, in a sentence consisting of a subject, copula and predicative adjective, the copula "groups with" the subject if the adjective is in the so-called "long" form, but with the adjective if the adjective is in the "short" form (Mel'ničuk 1958, 49-50; Prokopova 1981, 211); never does a boundary occur between accented verb and subject in arrangements: "verb - subject - other element" (e.g. Zlatoustova 1962, 35); in a construction "subject - unaccented pronominal object - accented verb" the object groups with the subject, but in "subject - accented verb - unaccented pronominal object" with the verb (e.g. Sirotinina 1963, 126); etc. Systematic research on such phenomena would, in my view, make an important contribution to the understanding of the units in which information is processed.

The fact that the contour so frequently occurs in different languages (e.g. Collier 1975, 294) can probably be explained on the basis of its (complex) meaning. The first accent with its postcentre signals that the presence, in the piece of the world projected, of a referent of the thought introduced by the first accent is not communicated awaiting the next thought. In the canonical interpretation, the presence of the second accent makes the thought introduced by the first accent into a thought of something already known to be present in the world ("push down"). The second accent, by being falling, does the same for the thought introduced by the second accent itself. And the combination of the falling accent and the low postcentre ("no further thought announced") closes the concatenation. As a consequence, the complex projection is a self-contained whole which conveys preexisting knowledge of the speaker (whether he indeed already had this knowledge or only creates the illusion is irrelevant). This corresponds with the common view on linguistic communication: one participant knows something and utters a sentence because he wishes the other participant to have the same knowledge.

Elaborations can probably be derived from this basic pattern. For

example, the boundary in can for Dutch be shown to convey that thought 2 alone is not the second thought of a basic , i.e. a concatenation $((1 + 2) + 3)$ is excluded (but a concatenation $(1 + (2 + 3))$ is not prescribed; 1 can also be separately concatenated to 3 – see Note 2, last two examples, when spoken with $1(\emptyset \dots \emptyset)B1(\emptyset \dots \emptyset)A$).

7. IK-7

This contour has been newly introduced in Bryzgunova 1977 (117–118, 207–208). It differs from IK-3 in that the rising pitch accent ends in a glottal stop. The sentences involved are interpreted not as “questions” but as emphatic “assertions”. The pronunciation involved is possibly a means to neutralize the opposition between type 2 and IK-3, or an emphatic variant of type 2 or IK-3. For the time being it is doubtful whether a glottal stop introduces a further type of pitch accent.

8. Half Movements

Except for the presence of rise 5 and fall E, the IPO-inventory of perceptually relevant pitch movements in Dutch does not reflect the fact that the size of pitch movements can vary audibly. By neglecting such variations in size it is implicitly said that the information which the size of movements conveys, for example about the emotional condition of the speaker, is not segmentable in discrete units.

Variations in size, together with e.g. tempo variations, also indicate which stretches of speech “belong together”. Neglect of these variations implies the hypothesis that the movements involved remain the same “full” movements, but exhibit their meaning only inside their own stretch, e.g. (cf. 't Hart 1976, 12). The latter type of temporary changes in the distance between the two reference-lines must be transcribed in a linguistic analysis of a text, because it is linguistically relevant that, for example, a fall A in a parenthesis is the “last” accent only of the parenthesis (the “sentence” can continue).

From the fact that in Part II, Section 1 above some questions have been formulated about the Russian equivalent of rise 5 it can be deduced that I assume for the time being that this half movement has no separate linguistic function (compare Collier 1972, 61, who calls 5 & A a contextual variant of 1 & A). Fall E is, as it were, the upper half of fall A: . The assignment of different labels in this case, but not in the case of an “extra-deep” A for emotional reasons, and not in the case of a “small” A in a

stretch with narrowed span, reflects the view that only in this case does the difference in size make another pitch accent: perceptually, as the IPO calls it, and, as I would prefer to say directly, semantically.

The Dutch fall E occurs in combination with rise 1 (I & E) and as the only movement in a syllable. In the first case the syllable involved is prominent (as I lends prominence); in the second case there is some hesitation to call the syllable prominent; 't Hart and Collier (1971, 7) speak of "secondary prominence" in case (a) below. Fall E has been attested in the following positions (*ibid.*).

(a) Between I and A in the so-called "terrace-pattern": (0...0I0...0E0...0A0...0). Note that a "half" A to the low reference-line remains an A.

(b) In utterance-final position as a so-called "call-contour".

(c) In utterance(part)-final position as "continuation contour". This occurrence is described as a contraction of A & 2.

A half fall does not occur in Bryzgunova's inventory for Russian, but something at least very similar seems to occur in that language. Possibly, the movement is referred to by the "modal realization" of IK-1 described as follows (Bryzgunova 1980b, 232):

This modal realization differs from the neutral realization in that the precentral vowel is longer and has a higher tone, and in that the central vowel is longer and has a falling-rising pitch movement; thereby the central vowel is spoken on a level which is lower than the precentral syllable but higher than the syllables in the beginning of the construction.

Beside that E is a half movement, it is

clearly distinguishable from other falls by its curious side-effect of suggesting a jump of pitch over a musical interval, viz. approximately a minor third ('t Hart and Collier 1971, 6-7).

This "side-effect" of a jump instead of a glide is for other authors (e.g. Ladd 1980, 169-170) the defining feature of the phenomenon under discussion. The IPO-transcription of the phenomenon in a (falling) movement during the syllable instead of a succession of level tones with a (downward) jump in between is in accordance with the neglecting elsewhere of level realizations of pitch accents (see Part II, Section 9 and Note 6 for further points in this connection). However correct the transcription may be, I think it must be explained that a level realization is normal with E but not with other pitch accents. The traditional explanation, namely that this realization is necessary for calling over a great distance, is rejected by Ladd (*op. cit.*, 169-179), and is in any case insufficient, because E is realized in this way not only in such calls. Maybe, an explanation can be found in the fact that sizes of pitch intervals are more easily discriminated when the pitches are steady and when there is a fixed standard reference ('t Hart

1974, 59, 61), so that the level realization and the more or less standard minor third serve to ascertain the recognition of the "half" status of the fall?

The semantic analysis by Ladd (*ibid.*) of the "call" occurrences is, in my view, convincing. Ladd says that the function of the half fall is "to signal an element of predictability or stereotype in the message" (p. 173)⁷; see also Gibbon (1976, 279–280). In the terminology of the present article the formulation would be (for I & E): 'I communicate the presence of this thought/the presence in the world of a referent of this thought, and that communicating this presence is redundant (that the presence was to be expected)'. It is, I think, not clear whether the redundancy-signal must be related to the presence of the thought or to the presence of a referent of the thought or to both.

When you call John with this contour (*Jo-ohn*) you convey that you are thinking 'John' at the moment of speaking, but also that you do not want to say: "I become aware of the presence of John"; you rather say: "here it is, the thought 'John'"; the contour signals that a thought was bound to occur and now indeed occurs. The same applies for stereotype greetings

(*morning*). To give another example, a first answer to a question will most often be pronounced with a full rise & fall: *What are you reading? A book*. But when the same question is repeated the irritated speaker may choose a I & E:

a bo-ok. That is to say: "I inform you that I am thinking 'book' (that there is a book), but this information is redundant, for you are already supposed to know that I am thinking 'book' (that there is a book)". Note that it is not redundant to convey that something is redundant. The use of E as a "secondary" accent is now only one step further; in this case the speaker, so to speak, also makes the syllable both prominent and not prominent, he both does and does not communicate the presence of the thought involved. This makes sense if you realize that in concatenations of thoughts the absence/presence of one thought can have consequences for the absence/presence of another thought; the presence of one thought can be communicated "in subordination to" another thought, so that one accent can be "less an accent" than another.

Probably, the two occurrences of E (presence communicated and said to be communicated redundantly, and presence "subordinately" communicated) can best be described as two (contextual?) variants of a single meaning.

It is possible that, besides a half fall, a half rise (starting on the low reference-line) exists, with a comparable redundancy-meaning concerning the announcing of the next thought.

9. *Precentres*

Nothing has hitherto been said about the function of the parts of contours which precede prominence-lending pitch movements. Although it cannot be excluded that some distinctions will be found here (for example, the absence versus presence of a "zanos" in the syllable before the pitch-accented syllable may have some function) I do not think that precentral parts of contours have a major function. This view is implicitly contained in the preceding analysis; in this section three points in this connection are made explicit.

The stylizations (rise & fall) and (mere fall) cover, among other things, the configurations and . Instead of transcribing the difference between the two configurations primarily as a difference inside the prominent syllable one might propose, for : 'low precentre plus fall', and for : 'high precentre plus fall'. Obviously, such a description would result in a quite different linguistic analysis, for one would now try to summarize in a single invariant meaning all occurrences of this fall. In my view, the IPO-type of transcription is more illuminating. For Russian the illumination concerns mainly the difference between type 1 and type 2, and IK-4. When in Section 5 above the "Dutch" pronunciation of the sentence *A Ivgan* was discussed (i.e. rise & fall plus rise 2) it might as well have been said that the fault consists in the pronunciation of a low instead of a high reference-line before the fall: instead of . But somehow, such a presentation would have left the impression that one need not bother students with such subtleties, while the IPO-type of stylization (instead of) makes the importance of the difference immediately clear.

Of course, an IPO-fall cannot be identified with a fall in other systems of transcription, neither formally nor semantically. I think it would be enlightening to translate the discussion on English falling-rising contours in the IPO-terminology (for a concise review see Gibbon *op. cit.*, 265-273 (and Chapter 3)).

The second point which reduces the importance of precentral parts in the analysis presented here is the fact that the linearity principle (Part I, Section 5) has not been applied to these parts.

If an utterance starts on the low reference-line, one can expect, in the IPO-grammar of Dutch intonation, a rise 1 or a rise & fall, but not a fall A (the example is simplified). Application of the linearity principle would result in an analysis saying that the low reference-line already

announces that A will not occur, i.e. there would not be an opposition between e.g. I and A in the preceding context 0...0, and the low reference-line would have a semantic load. Instead of this, I retained the opposition I versus A; the hypothesis underlying this analysis is that only the occurrence of a particular type of pitch accent enables to identify the preceding unaccented stretch as either 0...0 or $\emptyset$ ... $\emptyset$. This hypothesis is supported by experimental findings on the interpretation of the ambiguous utterance-initial rise (Part II, Section 5). In Dutch, if after this ambiguous rise a rise & fall occurs, the ambiguous rise is most often interpreted as a redundant side-effect of switching on to speech, i.e. the stretch preceding the rise & fall as a low reference-line:

But if a fall occurs, the initial rise is most often interpreted as a prominence-lending rise, i.e. the stretch preceding the fall as a high reference-line:

(Van Katwijk 1974, 153-156).

For the time being there are no semantic facts which preclude applying the same argument to the (IPO-)movements 4 and D. For example:

(0...01D...D1 & A0...0): 'rise (plus high postcentre) plus rise & fall'. Stretch D...D is thus analyzed as being a high reference-line with respect to I and a low reference-line with respect to I & A but no meaning is assigned to the stretch.

The last point to be mentioned here concerns the transcription of level tones. In IPO-stylizations level tones do not occur, because the approach is based on the assumption or fact that prominence is mainly lent by pitch obtrusions during the prominent syllable. Against such an exclusive pitch obtrusion approach other investigators adduce phenomena as "scoop" (where the pitch peak is reached late in the prominent or in the following syllable). For example, Ladd (1980, 35): "[...] their definitions would force them to identify the accent in *won^{der}u_i* as being on '-der-' (the IPO would transcribe here probably 0...03B0...0; see Note 6 in this connection). As I am not competent to contribute to this discussion (at present mainly between pitch and rhythm adherents), I confined myself to taking some practical decisions in order to be able to translate other descriptions in the IPO-terminology. In the first place, I left open the possibility that '+ prominence' occurs without this prominence being more specified in a particular type of pitch accent (Part I, Section 9 and 10). Secondly, I started with the fact that certain syllables are prominent, thus, e.g., that *won-* in Ladd's example is, by whatever cue(s), prominent. Then

I identified low level (initial parts of) prominent syllables with prominence-lending falls, and high level (initial parts of) prominent syllables with prominence-lending rises. This procedure leaves open the question by which cue(s) the level prominent segments are made prominent, for example in it may be the following rise which lends prominence (Note 6). But the identifying is a semantic decision, because, e.g., low level prominent syllables are now supposed to have semantically the same type of prominence as syllables which are made prominent by a falling pitch movement during the syllable (although I would not wish to deny that level realizations convey something extra).

This decision reduces further the importance of precentral parts of contours. This can be shown by comparing the resulting analysis with an analysis which takes the opposite decision, viz. the stylization of all movements during the prominent syllables as level tones. Such an analysis is presented by Isačenko and Schädlich (1966) for German.

The authors discriminate between rising and falling tone switches, and within each between preictic and postictic tone switches. This results in:

A.I.		rising tone switch, preictic
A.II.		rising tone switch, postictic
B.I.		falling tone switch, preictic
B.II.		falling tone switch, postictic

The identification of low level syllables with falls, and of high level syllables with rises, results in:

A.I.	identical with	(Russian: IK-6; Dutch: 0...010...0)
A.II.	identical with	(Russian: IK-4; Dutch: 0...0B & 30...0)
B.I.	identical with	(Russian: type 1; Dutch: 0...0A0...0)
B.II.	identical with	(Russian: type 2/IK-3; Dutch: 0...01 & B/1 & A/ 1B0...0).

Now, the latter stylizations give rise to another classification of the contours: the main division is no longer the one between A. and B. because B.I. is classified with A.II. and B.II. with A.I.:

	(B.I.)	fall plus low postcentre
	(A.II.)	fall plus high postcentre

(B.II.) rise (& fall) plus low postcentre

(A.I.) rise plus high postcentre.

In other words, a classification based primarily on the position of the precentral syllables (low precentre gives rising tone switch, high precentre gives falling tone switch) has been replaced by a classification based primarily on the falling (low) versus rising (high) position of the (first part of the) central syllable, irrespective of the precentral part. This eliminates the problem (Gibbon 1976, 237) that in the model of Isačenko and Schädlich a rising tone switch can only be followed by a falling tone switch and vice versa.

In accordance with their classification, Isačenko and Schädlich search for the invariant meanings of rising and falling tone switches, and of preictic and postictic switches in each category, but the accents in and , and the accents in and never meet. In the alternative classification the accents in the pairs mentioned are identical (leaving aside the problem of mere rise versus rise & fall). The differences between the respective semantic analyses are consequently the following (leaving aside that I took rise & fall as basis, did not use notions as "question" as primitives, and did not restrict the analysis to sentence-final tone switches).

(1) Isačenko and Schädlich define falling tone switches as being unmarked and rising tone switches as marked: falling tone switches do not convey information about the presence or absence of a further tone switch in the sentence (*op. cit.*, 60–61). From the alternative point of view this definition of a falling tone switch is revealed as being the consequence of grouping together and : the former indeed does not convey information about the presence or absence of a further tone switch (type 2 and IK-3 in Russian), but the latter (type 1) does, namely: there will not be a further tone switch (in the terminology of the article under discussion).

(2) The rising tone switch is defined as announcing the presence of a further falling tone switch (*ibid.*). In the case of (cf. IK-4), so the authors say, it holds true that, if this further tone switch does not occur in the utterance itself,

so wird die Äusserung, deren letzter Tonbruch postiktisch steigend ist, zu einem Satz (also einer relativ abgeschlossenen Einheit) integriert und gleichzeitig als Frage charakterisiert (*ibid.*).

The alternative classification accounts for this semantic intuition that the sentence involved is a relatively independent unit by identifying the accent

of with the accent of , while the analysis retains the common feature of rising tone switches (the announcement of the semantic equivalent of a next accent) by positing for both and 'high postcentre'.

10. *Rise & fall*

Finally, I return to the decision made in Part I, Section 10 to regard a rise & fall as an indivisible unit and to describe the other pitch accents as denying in different ways the meaning of a rise & fall (or, to be precise, the other way round). The alternative discussed in the same section did not deviate from the formal opposition relations.

It might be enlightening to start with the following hypothetical "ideal" system of oppositions.

(1) (a)	fall plus low postcentre:	
(b)	fall plus high postcentre:	
(2) (a)	rise plus low postcentre:	
(b)	rise plus high postcentre:	

Now we remove (2a) for semantic reasons. This manoeuvre renders the system asymmetric.

A rise & fall is now opposed to the non-rise & fall's:

(1) (a)	
(b)	
(2) (a)	?
(b)	

Speculating further, we can say that Russian and Dutch react differently to this situation.

Russian fills the open place with IK-3:

(1) (a)		(type 1)
(b)		(IK-4)
(2) (a)		(IK-3)
(b)		(IK-6)

The semantic symmetry is now restored, although the contour which fills the gap remains a somewhat strange element in that it (presumably) does not specify the reason for not conveying the information contained in a rise & fall. Formally, the Russian system is asymmetric, it has under (2a) two contours.

Dutch chooses another solution. It tries, so to speak, to remove, beside (2a), also (1b), so that a falling pitch accent is associated with a low postcentre and a rising pitch accent with a high postcentre:

- (1) ($\emptyset \dots \emptyset A 0 \dots \emptyset$)
 (2) ($0 \dots 0 1 \emptyset \dots \emptyset$).

Now the transition from the peak to the first postcentral syllable has lost its opposition value. Further, Dutch adds oppositions for the last syllable:

- (1) (a) (b) ($\emptyset \dots \emptyset A 0 \dots 0 2$)
 (2) (a) (b) ($0 \dots 0 1 \emptyset \dots \emptyset 2$) (the "stair pattern").

This is an oversimplification, for the contour 'fall plus high postcentre' ($\emptyset \dots \emptyset B \& 3/A \& 2 \emptyset \dots \emptyset$) does exist in Dutch, and it participates, just as a rise & fall, in oppositions for the last syllable. But the contour is clearly a more marginal member of its system than the Russian contour IK-4, be it only in frequency of occurrence. I would suggest that this marginal status is a consequence of the fact that the Dutch contour does not have in a rise & fall a real counterpart: the system is formally symmetric, but semantically asymmetric.

The discussion in this section is not meant to prove anything, but it may evoke sympathy for the view that in both systems there is an observable tension between the formal and the semantic relationships.

The fact that the IPO-research enables us to make explicit the linguistic problems of pitch contours is, in my view, the best possible proof of the high quality of this research. In this article I have tried to show that any description of the forms of contours which classifies and stylizes phonetic facts contains implicit semantic hypotheses. In dealing with natural language there is no escape from meaning.

University of Amsterdam

NOTES

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¹ In 't Hart (1979a) the symbol I & A is used when a "pointed hat" (rise & fall) is the last (and only) pitch accent of a sentence (in a graphical sense), and I & B elsewhere; but the computer instruction is identical (p. 21). If the movement involved is indeed only one type of pitch accent the notational differentiation is, from a linguistic point of view,

somewhat confusing. From other publications (e.g. 't Hart and Collier 1979) I gather that a mere fall A is always the last pitch accent of a sentence, but a rise & fall is not. This fact must be accounted for in the semantic analysis of the accents (in fact, it is one of my reasons for not analyzing a rise & fall as the combination of a rise and a fall). In one way or another, a fall A seems to signal that it is the last accent of a sentence (which is then a semantic notion). Assuming that I & A is identical with I & B, then, if a rise & fall is the last accent of a sentence, this fact is signalled not by the accent itself but by its context (in 't Hart (1979a): by the presence of a full stop or a semicolon following the accent), so that this fact must not be a part of the semantic description of the accent itself. The notational differentiation between I & A and I & B suggests, however, that it is the accent itself which signals the presence of a sentence boundary. The notation thus leads the linguistic analysis astray.

But other publications given other information; e.g. Boves and Ten Have (1980, 132) present the two accents as perceptually different: I & A is: and I & B: (compare – see Note 2 – IB: .

The question is whether there are realizations of a rise & fall which unambiguously convey that it is the last accent (or: a pitch accent). This point needs further clarification (see also Part II, Section 1).

² Only if point (f) is correct is the bias in point (c) correct: if the opposition between I and I & A/I & B would be neutralized in final position the choice between a high versus low postcentre must be analyzed as being implemented by the high resp. low position of postcentral syllables themselves, and thus as being absent if there are no such syllables. For comparable reasons Part II pays special attention to cases of (potential) neutralization.

My analysis accounts for the case that in the syllable following the syllable with I fall B occurs (so that there are no syllables on the high reference line) in the following way. The contour IØ...ØB reads (in the present phase of the procedure): 'rise plus high postcentre' (for I) plus 'boundary mark B' (for B following Ø...Ø). The combination IB (i.e. in subsequent syllables) occurs, following 't Hart *op. cit.*, in two cases:

(a) instead of IØ...ØB if the accented syllable happens to be the last syllable before a boundary;

(b) instead of IØ if in the second syllable following I again I and not A occurs.

IB reads in case (a): 'rise plus high postcentre plus boundary mark B'; and in case (b): 'rise plus high postcentre'.

Although the opposition between these two sequences is, strictly speaking, neutralized in IB if I follows – but see further – (if Ø...Ø follows it is case (a)), the segmental information will most often make clear which reading is meant, and in case (a) there is probably in non-synthetic speech a lengthened pronunciation of the preboundary syllable (e.g. De Rooij 1979, 105).

Examples (see 't Hart *op. cit.*, 33):

De noordenwind en de zon waren erover aan het redetwisten...

... I B Ø ...

This is case (a); cf.: ... en de zonnen waren ...

I Ø B Ø

te langen leste: 'rise plus high postcentre' (for I) plus 'fall' (for A).

I Ø A

te langen leste: 'rise plus high postcentre' (plus 'rise plus high postcentre'); this is case (b), Ø is replaced by B in the context of the following I.

I B I

te langen leste: 'rise plus low postcentre' (plus...); the difference between IB and I & B seems to reflect the intuition that, if the accent on *leste* had been absent, the contours would have been IØ...Ø resp. I & BØ...Ø; in other words, I conveys that the postcentral part is high, although in reality the high reference-line may be interrupted by the need to return to the low reference-line before the next accent in the same stretch. In rapid speech the opposition between IB and I & B seems to be neutralized (*op. cit.*, 21); in that case the difference between a high and a low postcentre is probably recognized by the actual high resp. low position of syllables following the prominent syllable, so that, if there is only one such syllable, recognition may be difficult.

te langen leste: 'rise plus high postcentre plus boundary mark B (plus...)' this contour is probably unacceptable here because the meaning of the boundary is incompatible with the segmental information (if the contour occurs it is a "slip of the tongue", i.e. the segmental information wins), compare:
te langen, zo zeggen wij, leste: this is correct because the meaning of

1 0 B 0 0 0 1

the boundary is not contradicted now in the segmental plane.

In a combination B & 1, B seems always to be a boundary mark (i.e. case (b) seems to be excluded), not only if 0...0 precedes. For example, in sentences as the following 't Hart chooses 1 & B 1, and not 1 B & 1, because the latter combination has a "dramatic effect" (*op. cit.*, 11):

Dagarna begon de zon krachtig te stralen...

1 & B 1

But if the sentences involved are altered slightly, to the effect that marking a boundary becomes more acceptable, the combination B & 1 seems to be correct:

Dagarna begon zowel de maan als de zon krachtig te stralen...

1 B & 1

Compare also (*op. cit.*, 13-14):

...een groot, bloot paard...

A & 2 B & 1

Here *op. cit.* has B & 1 because of the comma.

...een grote, pure verwondering....

1 0 B & 1

It is very important to collect all the facts about the combinations mentioned in Note 1 and 2, among other things because the Russian systematic equivalent of 1B must be analyzed differently in view of the fact that it occurs with following 0...0 syllables without B signalling the presence of a boundary (see Part II, Sections 2 and 3).

³ Some examples in which IK-1 is not type 1, and IK-2 not type 2.

- Wh-sentences meant as "questions" (Bryzgunova 1977, exercise 13 and 14):

Kakoj sok p'et Nataša? (IK-2, type 2)

(*Nataša p'et sok.*) *Kakoj?* (IK-2, type 1)

Kakoj sok p'et Nataša? (IK-2, last accent type 1)

- Sentences with *ili* (*op. cit.*: exercise 77):

Večerom my pojdem v teatr ili v kino. (last accent IK-1 resp. type 1)

Večerom my pojdem v teatr ili v kino? (last two accents IK-2 resp. last accent type 1)

Večerom my pojdem v teatr ili v kino. (last accent IK-1 resp. type 1)

Večerom my pojdem v teatr ili v kino? (last two accents IK-2 resp. last accent type 2)

(In the first part of exercise 77 the opposition "statement versus question" is spoken as indicated in the first two examples; the last two examples are from the second part of the same exercise).

- Other sentences (exercise 13, 13, 38, 112):

Eto moja sumka ! (IK-2, type 2)

Eto moja sumka . (IK-1, type 1)

On priechal iz Danii . (IK-1, type 2)

Sotrite s doski ! (IK-2, type 1)

See further Part II, Section 6.

⁴ Van Dooren and Van der Eynde (*op. cit.*, 14) give the following Dutch example of a type 1 contour in non-final position:

de [nieuwe ambassa]deur (i.e. $\emptyset \dots \emptyset A0 \dots 01 \emptyset \dots \emptyset$)

Van Buuren (1980, 5, 8, 8) gives:

maar 'daarom| zijn de 'mensen| in ' groningen| zo te ' leur gesteld||

dan 'gaan we | een 'echt | con'cert | 'geven||

'da's | 'moeilijk | om 'uit te | 'rekenen ||

(i.e., for the first two: $\emptyset \dots \emptyset A0 \dots 01 \& A0 \dots 0$; for the third: $1 A0 \dots 01 \& A0 \dots 0$). (I take only the cases with a low postcentre after the fall.)

For English, Van Buuren (1981) does not mention that a mere fall is unusual as a non-final accent, and there are several examples.

A striking property of the examples is that the syllable involved is in almost all cases the second syllable of the sentence. The (pitch)accented status of this syllable sometimes seems to be debatable; it might be argued that the fall on this syllable is a regaining of the low reference-line after an "overshooting" (automatic) rise on the first syllable (for this rise see Part II, Section 5). In IPO-descriptions this regaining is probably "stylized away", but compare the somewhat strange: *kom jij dan ook* (Collier and 't Hart 1978, 70),

$\emptyset B0 \quad 0 \quad 3\&C$

i.e. an "empty" change of reference-line, but no pitch accent assumed.

In Russian, type 1 normatively (Wenk 1970c, 221, 223) occurs on the first part of "questions" as:

King, skazite, pozhalujsta (the cinema, say please - i.e. where it is).

I would have no problem with calling parts as *kino* here separate sentences.

In any case, the meaning of a merely falling pitch accent itself does not exclude its occurrence on non-final parts of what is normally called a sentence. In combination with a high postcentre (for Russian) and in combination with a final rise 2 (for Dutch) such occurrences are normal. Thus it is the combination with a low ending postcentre which creates the correlation with sentence boundaries.

⁵ In Keijsper (1980, 217-219) I used the notion 'set' in the description of '+' prominence'. This use turned out to be too unspecific to cover all relevant facts. For example, for *John works* in both *John* ("Theme") *works* ("Rheme") and *John works* ("Theme") *in an office* ("Rheme") the same set would be defined. Although this is, I think, correct on a certain level, it says only what is identical in "Themes" and "Rhemes", it does not enable us to say what is different. Further, the formulation in *op. cit.* does not account for the fact that, when 'x' is absent in the stream of information, there need not be another thought. For the case *love-affair* versus *love-song* the old and new formulations amount to the same; instead of saying: 'affair' in *love-affair* is chosen from the set {'affair', 'song', ...}, I now say: 'affair' in *love-affair* could have been absent. Only the latter formulation is appropriate for the case *love-affair* versus *love*. Likewise, for *John works*: instead of: 'works' is chosen from the set {'works', 'sleeps', ...}, I now say: 'works' in *John works* could have been absent, which is not precisely the same, because only the new formulation accounts for the fact that 'John works' is opposed to itself with the second part absent.

As a consequence of this step taken in the description of accentuation the formulations of intonational meanings in the present article differ somewhat from the formulations in *op. cit.* This difference does not reflect a change of opinion on intonation.

⁶ In order to make the argument more easily verifiable, I repeat it by applying it to the Dutch case (although, in principle, the solution can be different for the two languages).

(1) One of the IPO-discoveries is that rises, in order to lend prominence, must be located early in the syllable (e.g. Collier 1970b, 82).

(2) This holds true for rise 1, which is early, but not for rise 3, which is late.

(3) These facts can be understood if the work of Van Katwijk is taken into account. Van Katwijk mentions that in mode-2, rises are significantly later than in mode-1, and that the Dutch "cap-pattern" (with rise 3) is probably a mode-2 contour (e.g. Van Katwijk 1970b, 93).

(4) A mode-2 contour is a contour in which the high reference-line serves as base-line from which excursions are made to the low reference-line, so that pitch accents in mode-2 are downward obtrusions. Pitch accents in mode-1 are upward obtrusions (e.g. Van Katwijk 1974, 151-152).

(5) Consequently, rise 3 can be evaluated as a movement which is made in order to return to the high reference-line after a downward obtrusion, comparable with fall B in mode-1.

(6) The Dutch "gap-pattern" (also: "sack-pattern") is being stylized as follows (Collier and 't Hart 1970, 25; 't Hart and Collier 1971, 8):

(0...0B & 30...0C).

For example ('t Hart and Collier 1978, 71): *en klaar is Kees!*

(7) It seems to me that this is a translation of a mode-2 contour in a mode-1 stylization.

The mode-2 stylization would be:

Compare, for rise & fall in mode-1: 1 & A or 1 & B.

(8) The hesitation between 1 & A and 1 & B in mode-1, and the rise 3 problem in mode-2 indicate that it is necessary to distinguish between the notions "prominence-lending pitch movement" and "prominent sentence fragment". In e.g. — rise 1 lends prominence to the fragment in which it occurs, so that the two notions coincide. In a rise & fall ("pointed hat") and a fall & rise ("gap") it may be difficult to determine which of the two movements lends prominence to the prominent fragment. In any case, my proposal is not meant to deny that in the "gap-pattern" it is the rise which lends prominence (this is a phonetic problem); the linguistic interpretation presented here starts from the notion "prominent fragment", and this fragment contains in the "gap-pattern" also a fall. But I would feel more safe if this fall at least contributes to making the syllable prominent. Compare Collier (1972, 189) on Halliday's "fall" (in mode-1): "the rise occurs in approximately the first 100 msec of the syllable and certainly contributes to making it prominent. Consequently, it seems to be little justified to exclude the rising element from the definition of the primary tone". Collier thus interprets Halliday's "fall" as (prominence-lending)rise & fall. Later, the fall was interpreted as either A or B, but the rise remained 1. My proposal is to investigate whether the same line of reasoning can be followed for a fall & rise.

(9) In the Dutch "cap-pattern" there is no fall preceding rise 3:

(0...030...0C) (e.g. 't Hart and Collier 1971, 8).

(10) In accordance with the mode-1 stylization of the "gap-pattern" it is the "cap-pattern" and not the "gap-pattern" which is presented as the canonical occurrence of rise 3 (e.g. Collier and 't Hart 1978, 38).

(11) As rise 3 is late, the first fragment of the syllable containing rise 3 in the "cap-pattern" is on the low reference-line (Collier and 't Hart 1978, 40).

(12) Starting with the notion "prominent fragment" implies that this low level fragment belongs to the fragment to be interpreted linguistically. Just as (Part II, Section 1) is analyzed as a realization of the canonical —, so — ("cap") is analyzed as a realization of the (now) canonical — ("gap"). That is, it is a semantic hypothesis that a low prominent fragment is semantically equivalent to a prominence-lending fall (see Part II, Section 9).

(13) The proposal is then to transcribe the "gap-pattern" as 0...0A & 20...0(C) or even 0...0A & 30...0(C) instead of 0...0B & 30...0(C) (compare 1 & B or 1 & A).

(14) Against this proposal the objection can be raised that rise 3 is located in the syllable earlier than rise 2, and that fall B is located earlier than fall A (with respect to the relevant syllable), so that B and 3 in B & 3 are not equivalent to A resp. 2 (e.g. 't Hart and Collier 1971, 4).

(15) This objection can be answered by saying that the argument would prevent the transcription of a "pointed hat" as 1 & A or 1 & B, for here rise 1 is earlier, and fall A

later resp. B earlier (with respect to the relevant syllable) than in the non-combined occurrences ('t Hart 1979a, 21). So the argument in (14) can, if I understand the facts correctly, lead to an analysis of a "pointed hat" as "late prominence-lending fall", which analysis takes a realization and not (which is then) as the canonical occurrence of the movement involved, and which analysis adds two new elements, viz. "prominence-lending fall later than A and earlier than B" and "non-prominence-lending rise early in the syllable", to the inventory (i.e. mode-1 can be translated in mode-2, and vice versa, but this is an empty enterprise).

(16) If the two analyses cover the same facts the proposed analysis has for the perceptual studies the following advantages:

(a) It makes the descriptions more economical for it abolishes rise 3.

(b) It explains the fact that the location of rise 3 in the syllable has a rather large tolerance-area (the regaining of the high reference-line then being the relevant feature); in fact, the top of 3 can occur after the prominent fragment (Collier 1970a, 13) (there does not seem to be a distinction as between 1 & B and 1B in mode-1).

(c) If the "gap-pattern" is used as the canonical occurrence of 3, the difficulties with imitating and recognizing rise 3 (as opposed to 1) will probably disappear (Boves and Ten Have 1980, 134-141).

(17) But the reason for the proposal to explore the alternative possibility is a linguistic one:

(a) The alternative description enables to read the patterns involved as indicated ('fall plus high postcentre (plus fall C)'). Among other things, this reading enables to account for the fact that rise 3 is always the last accent of a sentence(part) (Collier and 't Hart 1978, 38); in the analysis proposed this is just what one would expect, for it follows from the meaning of 'fall' (Part II, Section 1).

(b) For the comparative analysis of Russian and Dutch the proposed analysis is more illuminating. In Dutch, pitch contours with rise 3 are rather exceptional, Dutch is basically a mode-1 language. Russian is more mode-2 "minded": IK-4 is a fully-fledged part of the system (without C), and sentences with one pitch accent probably have, more often in Russian than in Dutch, a merely falling pitch accent (mentioned for Russian in comparison with German by Krušel'nickaja (1961, 254-255) and for Russian-English by Bolinger (1962, 82)). See further Part II, Section 10.

It seems to me that the facts concerning rise 3, as they have been published at least, do not exclude the alternative analysis. In general, more research on the functioning of "mode" in intonation is desirable.

⁷ But Ladd assigns this function to the fact that the accent is realized as a level tone instead of a movement during the accented syllable. He considers the same function to be carried by low level and high level "realizations" of low rises and high rises respectively (*op. cit.*, 179-186). In my view, the latter two are something else. I interpret a low level tone as a realization of a falling, and a high level tone as a realization of a rising pitch accent (see Part II, Section 9); the opposition to which Ladd refers is then probably the opposition between the presence versus absence of a non-prominence-lending rise following the accent (rise 2 in the IPO-system), which, in my view, is a semantic opposition, i.e. a contour without such a rise is not a realization of a contour with such a rise. In contrast, the call-contour mentioned in *op. cit.* (184-185) I would analyze as a realization of a (half?) rise.

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