

Amedeo De Dominicis

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THE MODEL OF MULTIPLE PROMINENCES

AMEDEO DE DOMINICIS

ABSTRACT: This paper aims at giving an experimental support to the model of the multiple prominences in the analysis of the intonation contour, formulated in De Dominicis (2010). The main topic concerns the interfaces which link the various components of the grammar (syntax, prosody, pragmatics, etc.). A new notion of Intonational Nucleus is proposed, as a relation among constituents/prominences rather than as a given constituent/prominence.

KEYWORDS: intonation, nucleus, prominence, prosody.

1. IN THE METRICAL AND PROSODIC STRUCTURES

In the literature, two models for the description of the prosodic structure exist: the Prosodic phonology (PPh) and the Metrical phonology (MPh). PPh adheres to the Prosodic Hierarchy and the Strict Layer Hypothesis.¹ Its primary concern is with phonological constituents that define domains of rule-application. But PPh has a notion of prominence. In fact, even though its primary concern is with prosodic constituents, it has been tied up with prominence from the very beginning. Thus Selkirk (1980b) has argued to label the constituents in the metrical grid representation of Liberman & Prince (1977) with prosodic constituents (syllable, foot, and prosodic word).² Nespor & Vogel (1982, 1986, 1989) adopt this proposal also for higher levels in the prosodic representation: the rules for constructing prosodic constituents from the syntax are formulated as rules that construct a metrical tree.³ By contrast, the

¹ The relations between prosodic constituents at different levels are commonly thought to be governed by the Strict Layer Hypothesis (SLH) (Selkirk 1984). This hypothesis states that in metrical trees, all prosodic constituents at a particular level consist exclusively of constituents from the level below. The SLH forbids a number of types of tree structures, including trees in which: a node has two parents in the level above, a node has two or more different types of children, a node has children from a level that is not the level immediately below it, a node does not correspond to any of the specified levels, or a node has children of the same type as itself.

² Selkirk (1980a) allowed for the possibility that there be constituents in the metrical representation not thus labelled.

³ For instance, consider the rules (Nespor & Vogel 1986: 168) for building prosodic structure on the level of the phonological phrase (pp), where the prominence in a pp is assigned to its

primary concern of MPH (Liberman 1976; Liberman & Prince 1977; Prince 1983; Halle & Vergnaud 1987; Hayes 1981, 1984, 1995) is with stress (or prominence): primary and secondary stress in words, stress among the members of a compound, and, occasionally, stress in larger syntactic constituents, up to the sentence. Constituency is indicated by brackets in the grid (Halle & Vergnaud 1987). Crucially, each grid-mark is the unique head of a prosodic constituent. Metrical theory, then, does have constituents as part of its representation, as does prosodic phonology.

So, actually, PPh and MPH do not conflict. In fact, the former focuses on the description of the domain and of the constituency (which is represented by a bracketed grid): prominence is automatically placed (right or left aligned: Nespor & Vogel 1986). The latter focuses on the description of prominence, which ensues from two types of representations (metrical tree and metrical grid), but both metrical accounts use prosodic constituents, even if they do not define them. In short, in a hierarchical approach (and both are so), there is no prominence without constituency and vice versa. The domain of a constituent (or of the phrase it belongs to) is established by, and under, a prominence. In short, MPH is *also* concerned with constituents, and PPh is *also* concerned with prominence.

2. FOCUS, CONSTITUENCY AND PROMINENCE

The assignment of rightmost (or default) stress was accounted for in Chomsky & Halle (1968: 90) by the *Nuclear Stress Rule* (NSR). This rule assigns prominence cyclically within syntactic constituents that coincide with word-boundaries on both sides. Stress is assigned to the rightmost of those vowels that come out of previous cycles with unreduced relative prominence ([1 stress] in the *environment* of the rule).

The relation of focus and default-stress is often thought of as a relation of conflicting requirements, with one (focus) overriding the other (rightmost stress). In fact, Jackendoff (1972) proposed that an abstract feature *F* be assigned to a focused constituent. In Jackendoff's account the focus depends on the assignment of an edgemoat nuclear stress *somewhere* inside its domain. If stress is not clause-final, then the focus on some element is responsible for the retraction. Since stress will be rightmost within that focused constituent, only such constituents are possible foci that have the nuclear stress rightmost inside of them.

According to the PPh literature, a possible consequence of focus is a

rightmost node (labeled *strong* or *s*) in languages whose syntactic trees are right-branching, and to its leftmost node in languages whose syntactic trees are left-branching: that is the prominence that is assigned edgemoat with regard to the pp is a grid-mark that heads the pp.

new (or a readjustment of) phrasing and, thus, a new constituency in the prosodic hierarchy. This effect is known as *constituent boundary insertion/deletion/relocation by focus* (Beckman & Pierrehumbert 1986: sec. 4; Jun & Fougeron 2000), and yields a segmentation of a single Intonational Phrase (IP) into more IPs. Since the prominence head is edgemost with regard to prosodic constituents (Newman 1946; Prince 1983; Chomsky & Halle 1968; Halle & Vergnaud 1987; Nespor & Vogel 1986; Selkirk 1986; McCarthy & Prince 1993a, 1993b), changing the locus of prominence by focus leads to configurations in which edges and prominence are further apart. The prosody will then react and bring them closer together again. In the typology that results from this there are two effects of focus on phrasing: the insertion of boundaries at the edge of the focus (both sides or only right or left, depending on the phrasing), and the deletion of boundaries and/or prominence between the focus and one of the edges of its scope. The main problem with this phonological hypothesis is that it needs a phonetic legitimacy: splitting an IP into more IPs has to be justified by some phonetic IP boundary marks: pauses, initial anacrusis, final lengthening and declination, initial tonal resetting (see hereinafter); actually that is not always the case. Failing at least one of these indexes, the splitting cannot be legitimate.

3. PROMINENCE IN PROSODIC STUDIES

The syllable was the first prosodic unit to be accounted for as a hierarchy of dependencies by 19th century linguistics. This new account was paved by the reconstruction of the behavior of the Indo-European sonorants, which were realized as consonants in some contexts, but as a syllabic peak in others, depending on the location in which they appeared in their syllable.

This new view of the syllable is in a way “syntactic” for at least three reasons: because it is a constituent-based view of the syllable (Pike & Pike 1947; Kurylowicz 1948); because of the predictability of the syllable boundaries (given a sequence of segments in a word in a specific language, the location of syllable boundaries is predictable, i.e. not distinctive); and because of the head-domain syntagmatic relationship between the syllabic nucleus and the syllable as a phonological constituent. Being-a-head is a role. The syllable nucleus is the unique element of the syllable that is a member only of constituents marked as head, within the syllable. The main phonetic correlate of the nucleus prominence over the syllable domain is the so-called sonority (Whitney 1874; Jespersen 1904; Ginneken 1907; Jones 1918; Saussure 1995: 222; Fischer-Jorgensen 1952).

On this basis the notion of Intonational Nucleus (henceforth IN) was then developed. The syllable nucleus is to syllable what IN is to the IP: “the intonational Nucleus is the head of the Intonational Phrase (IP), the

most prominent syllable within an IP” (Trask 1996: 184). They share some common features: both are sole, unique (constituent-based), and heads (prominence-based syntagmatic relationship), the boundaries of their domains (syllable and IP) are predictable, i.e. not distinctive.

4. SINGLE PROMINENCE IN THE INTONATION CURVE?

Early studies on prominence and IN date back to the late 19th and early 20th centuries. But they originated from a sort of writing fallacy: they aim at discovering the role of intonation in categorizing the grammatical structure of the utterance. So the intonation is considered as one of the devices which can explain the syntactic structure of a written utterance.

The most important and famous (old) approaches are the so-called “British school” (Palmer 1922, 1933; Kingdon 1958; Schubiger 1958; Crystal 1969; O’Connor & Arnold 1961; Halliday 1967) and the “American school” (Pike 1945; Wells 1945; Trager & Smith 1951). The former claims that some IP well-formedness marks exist and these are (with reference to the syllable structure as a model for the IP): an IP-INTERNAL mark, a prominent head constituent, called Nucleus; and five IP-EXTERNAL marks (with reference to the predictability of the IP boundaries): pauses, initial anacrusis, final lengthening and declination, initial tonal *resetting*. The latter sees the F0 contour as a combination of a finite set of *tones* or tonal levels (with a phoneme-like function); the tones are discrete *targets* (e.g. H/L); and there is no reference to a constituency of a larger intonation unit (e.g. IP).

Starting from the end of seventies, a new approach arose and rapidly spread over: the so-called Autosegmental model (AS). In the early AS studies, the identification of the intonation prominences relies on the INTONATIVE and METRICAL nature of the model: in the AS representation a star labels the tones which are associated with the F0 prominent syllables; and the notion of prominence arises from the results of a preliminary metrical analysis of the IP. This reference to the metrical structure is often less evident in the recent AS studies, nevertheless, it is an interesting solution to the definition of the IN. Figures 1 and 2 illustrate the metrical tree and the F0 curve of the Italian sentence *il capostazione ha spento la luce* (‘the stationmaster has turned off the light’); the bottom line refers to the AS analysis (in ToBI tonal representation): the metrical prominence (the terminal node stemming from the strongest path throughout the metrical branching) and the IN overlap⁴ on /^hlu:/, despite the greatest F0 value on is on /^htsjo/ (see footnote 5).

⁴ In the Figures 2-4 “n” = intonational Nucleus, and “DTE” = designated terminal element.

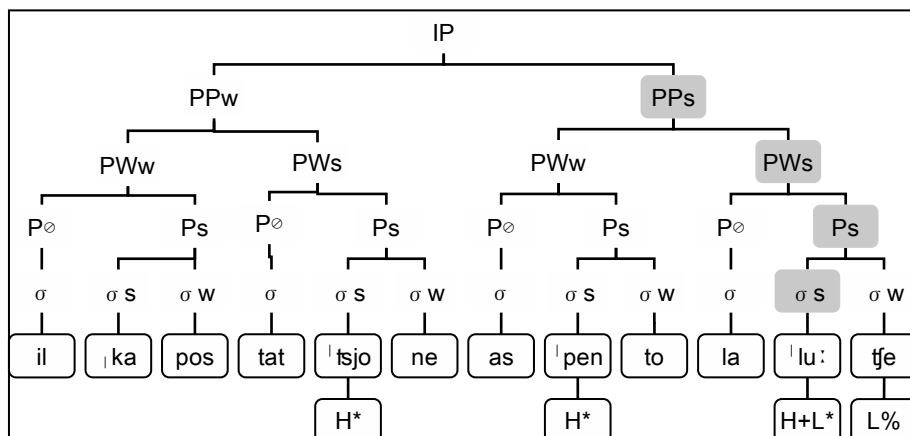


FIGURE 1. METRICAL TREE OF AN ITALIAN SENTENCE.

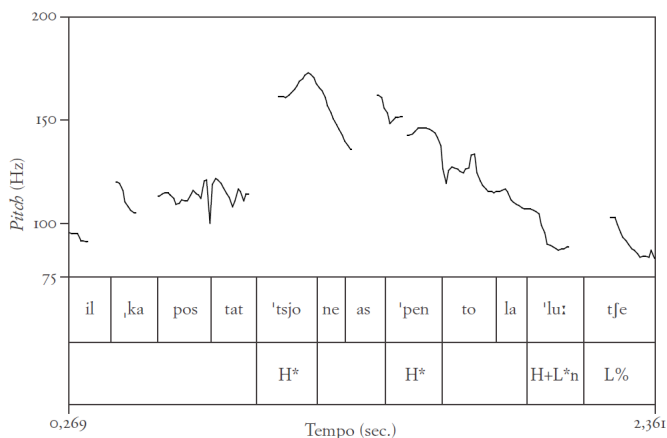


FIGURE 2. INTONATION CONTOUR OF AN ITALIAN SENTENCE.

AS studies give an interesting solution to the definition of IN. It copes two types of prominence: the METALINGUISTIC PROMINENCE, i.e. a government relationship where a constituent dominates over its domain (head relationship); and a PHYSICAL PROMINENCE, i.e. the phonetic surfacing of a phenomenon over a continuum of less phonetically marked stimuli (cf. sonority in syllable nucleus). In short, for AS the structurally prominent constituent is also expressed by one or more phonetically prominent marks.

But some problems still remain. Their importance arises if we move from read to (semi)spontaneous speech (showing less regular syntactic structures): these materials show a discrepancy between the locations of the abstract prominence and of the physical one (i.e. the location of the widest rising/falling movement in the IP contour).

5. MULTIPLE PROMINENCES IN F0: SOME EXAMPLES

The data issuing from (semi)spontaneous speech archives are particularly interesting, as they show several cases of multiple prominences in a given contour. Figures 3 and 4 illustrate the F0 contour of the Italian sentence *il capostazione ha spento la luce* ('the stationmaster has turned off the light'): in the first case as a possible answer to the question *who turned off the light?*; in the second one as a possible answer to the question *has a train station worker turned off the light?*. The focus site in Figure 3 is on *il capostazione* ('the stationmaster'); in Figure 4 it is on *il capo-* ('the -master'), and so the physical prominence; but in both cases the metalinguistic prominence is elsewhere:⁵ thus both the sentences get two points of prominence. In both cases it is difficult to locate the position of the IN: if IN corresponds to the maximum metrical prominence, then it has not enough perceptive (tonal) salience to be the carrier of the linguistic function to aggregate the IP; if IN corresponds to the maximum informative prominence, then it becomes a dependent variable relying on the phonetic and pragmatic realization by a given speaker, and it loses most of its grammatical nature; so the intonation analysis, by and large, would be a specific application of the pragmatics, rather than of the phonology.

In order to fix this sort of uncertainty about the IN⁶ position, we can imagine three possible (but not persuasive) solutions:

1) IN is always associated to the physical maximum upwards or downwards F0 movement (or to the perceptive prominence). That would involve,

⁵ It has been observed by many researchers that there is often a gradual downdrift in the value of F0 across a phrase (t'Hart & Cohen 1973; t'Hart, & Collier 1975; Pierrehumbert 1980; Cooper & Sorensen 1981; Liberman & Pierrehumbert 1984; Fujisaki & Kawai 1988). How downdrift (often referred to as declination) is dealt with by different theories varies widely. Ladd (1988) gives a review of some of the different theories. Many treat downdrift as an automatic physiological effect arising from changes in sub-glottal pressure during the course of an utterance (Lieberman 1967; Cooper & Sorensen 1981). This account gives the speaker little control over declination. The approach of the Dutch School (t'Hart & Cohen 1973) has been to use three parallel declination lines, which refer to a baseline, a mid-line and a line corresponding to the top of the speaker's normal range. The contour must follow one of these lines or be rising or falling between them. Fujisaki's model is more flexible in that the rate of declination and initial starting value can be varied, but the overall effect is still automatic (Fujisaki & Kawai 1988). Liberman & Pierrehumbert (1984) show that the final F0 value for utterances is invariant under a wide range of utterance lengths and pitch ranges which is inconsistent with the view that declination slope is constant. They propose an exponential decay downdrift effect, with the additional feature of final lowering at the end of the phrase. If applied to the signals in Figures 3 and 4, none of these three models of downdrift calculation gives different results: the metalinguistic prominence results always lower than the physical one. The physical PROM fall is larger than the metalinguistic one (9 st. vs. 3.5 st.), and even the difference in the values of the spectral emphasis is rather marginal (3 dB vs. 9 dB).

⁶ The definition has been given at the end of Section 3. PPh, MPH, AS claim its theoretical need.

at least sometimes, equating IN and the focus. As we said before, according to this interpretation, IN would lose most of its grammatical nature; and this solution would obviate any phonological analysis of the intonation.

2) According to the effect of CONSTITUENT BOUNDARY INSERTION, if more than an IN emerge in an IP, then insert a new IP boundary and segment the utterance into as many IPs as the detected prominences, complying with the principle of the uniqueness of the IN in each IP. But – as we said before – each IP delimitation has to be also justified by some boundary marks (suited to establish a discontinuity between an IP and the following): pauses, initial anacrusis, final lengthening and declination, initial tonal resetting. Failing at least one of these, the division into two IPs cannot be legitimate. This solution is not always empirically workable and thus it is not the right one.

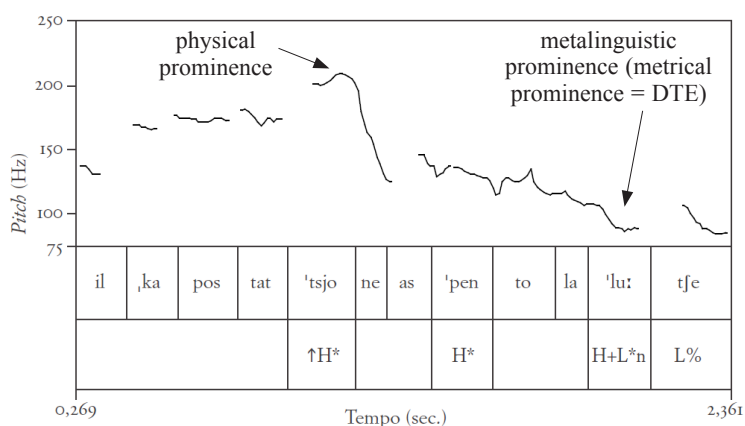


FIGURE 3. INTONATION CONTOUR OF AN ITALIAN SENTENCE.

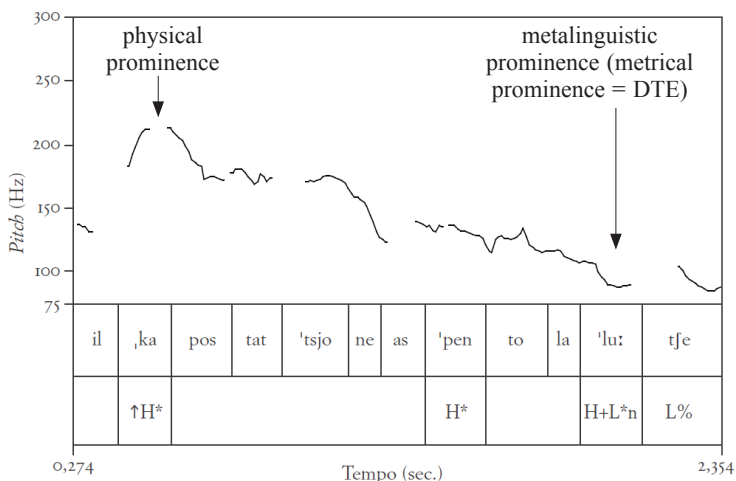


FIGURE 4. INTONATION CONTOUR OF AN ITALIAN SENTENCE.

3) If more than a IN emerge in an IP, then dismiss the first prominence (the focus prominence) and rigidly apply the principle: the IN site is always the last stressed syllable of the utterance in the IP (i.e. the last rhythmical prominence of the IP or DTE). But, this IN could be physically less prominent than the first one (the focus site), and thus it could be hardly legitimate, except for its faithfulness to the predictions of the model.

We propose a new solution, which consists in enabling several forms of prominence (metrical, intonative, informative) in the linguistic theory of intonation. This claim is at odds with the theoretical assumption about the uniqueness of the IN in each IP. But, according to a more general approach dating back to the glossematics, the highest node in the hierarchy could be a relation between constituents, and not only a single constituent (like in the traditional approach). The IN (MACRO-NUCLEUS) would be a *relation between many* (different types of) *prominences*. For instance, a focus prominence, a metrical prominence, and an intonation prominence would be the obligatory part of the Macro-IP structure. The lack of just one of these prominences would make a structural variation of the Macro-IP.

Now let's turn to a practical implementation of the model. In Figure 3 the macro-IN is the relation between the prominence on the syllable ['tsjo] and the prominence on the syllable ['lu:]. If the prominence on ['tsjo] is missing and a new prominence on [,ka] is added, then the structure of the IP changes and it becomes just alike the one in the Figure 4, where the macro-IN is the relationship between [,ka] and ['lu:].

6. THE MODEL OF MULTIPLE PROMINENCES

In order to account for these cases of multiple prominences, we focus on three main points (cf. De Dominicis 2010): a general principle (often known as linguistic interfaces) which leads to the relation among different functors, rather than to constituents; two kinds of phenomena (i.e. the functors of the interface): tonal rhymes and segmental perturbations; a mapping device (tonal grid).

The definition of the macro-IN is a multidimensional characterization, at the interface among different functors: the melodic curve (tonal rhymes), the metrical hierarchy, their pragmatic functions. Moreover, further functors are a number of phenomena which are typical of the oral production: the tonal or intonational rhymes (i.e. some tonal perturbations which are not involuntary, but depend on the speaker's intention), and some intentional segmental perturbations (cf. syntactic grids analysis by Blanche-Benveniste).

A TONAL RHYME is the recurring (or the rhyme) of some particular intonation patterns, with a double marking: they recur and they are unexpected (for that reason they may be called *tonal perturbations*). Examples are the intonation rhymes or some considerable F0 increases/decreases on the

syntactic constituents which are repeated or share some common syntactic functions. The rhyming patterns can be located on constituents which share identical or similar syntactic functions and/or alteration to the expected morphophonological segmental realizations.

A typical case of SEGMENTAL PERTURBATION is a phone change or a phone insertion/deletion: the omission of part of a word, a dependent clause without complementizer, a discourse fragment which looks atypical. These facts would be unpredictable and inexplicable, but they become explainable if you reassess them as segmental marks on the constituents where parallel tonal perturbations occur. An example of this kind are the alternations strong/weak forms in English (Bolinger 1981, 1986; Selkirk 1984, 1995).

The (originally syntactic) grid system (Blanche-Benveniste 1990) highlights the disfluencies and fragmentary nature of the speech (false starts, hesitations, repetitions). The syntactic grid has two dimensions: the horizontal axis shows the sequence of the syntagmatic positions (or constituents); the vertical axis illustrates the possible different paradigmatic realizations on the same position. A syntagmatic construction plus its paradigmatic fragments gives a DISCOURSE CONFIGURATION, which may occur at regular intervals, like a rhyme. The TONAL GRID (De Dominicis 2010) has the same two dimensions plus the intonation features of an IP. It too points out to the recurrence of the same tonal pattern in different syntagmatic positions or over the paradigmatic set of constituents in the same syntactic position. In both cases, if a given tonal perturbation occurs over and over, then all its instances are occurrences of the same *rhyming* intonation pattern.

7. TWO CASE STUDIES

In order to test the model of multiple prominences, we carried on an experimental verification. We manipulated the F0 of two natural signals. We expect that deleting or inserting a prominence to the F0 curve would trigger a change in the linguistic asset of an utterance. The natural signals are from the Italian CLIPS corpus (orthophonic, national, and tagged; the speaker is from Rome, age 34). In signal 1 (tagged “LP4m10bZ” in CLIPS), the speaker says: *È possibile che non trovi mai un momento per scrivere a un amico lontano?* (‘Is it possible that you have never time to write to a faraway friend?’). In signal 2 (tagged “LP4m08bZ” in CLIPS), the speaker says: *Se mi lasci un'altra volta solo, non ti parlerò per tutta la vita* (‘If you leave me alone again, I won’t talk to you for the rest of my life’). Figures 5 and 8 illustrate the F0 curve and the INTSINT (Hirst & Di Cristo 1998) annotation of both signals. Signal 1 hosts two IPs and two prominences (from now on PROM): Figures 6 and 7 refer to the metrical trees of IP1 and IP2. Signal 1 shows an intonation and a metrical PROM on the same position (at the end of IP1); and a second metrical PROM at the end of IP2.

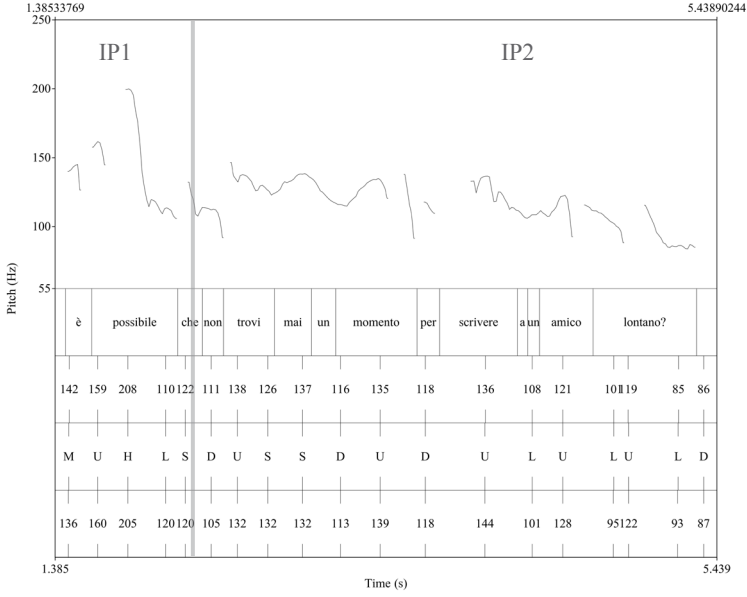


FIGURE 5. SIGNAL 1.

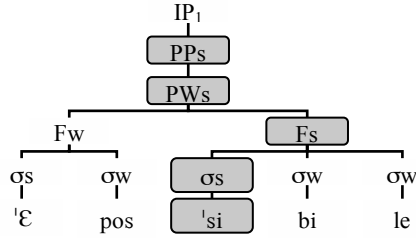


FIGURE 6. SIGNAL 1: METRICAL TREE OF IP1.

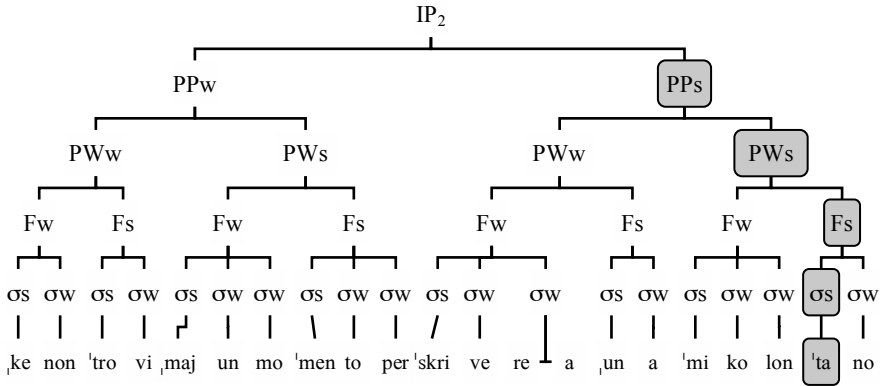


FIGURE 7. SIGNAL 1: METRICAL TREE OF IP2.

Signal 2 holds just a single IP, and shows a metrical and an intonation PROM on different positions: the intonation PROM is at the end of the first PPw (on *se mi lasci*), and the metrical PROM is at the end of the IP (on *vita*) (Figure 9).

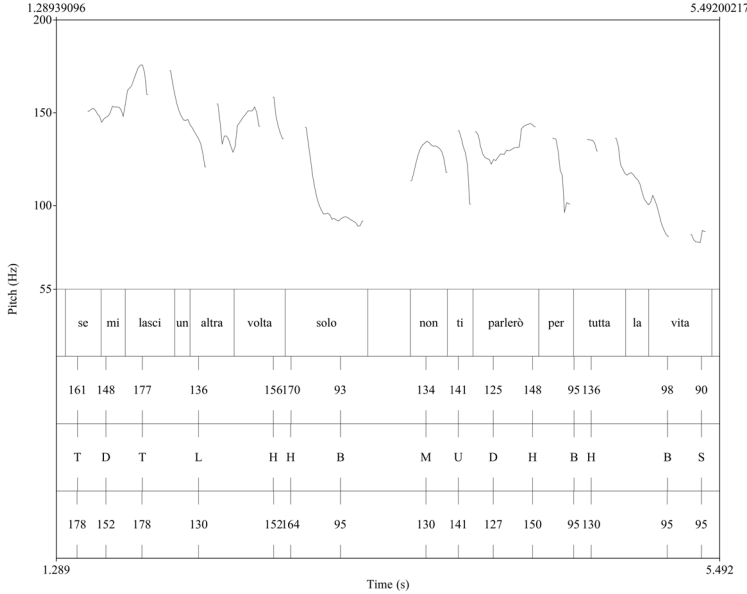


FIGURE 8. SIGNAL 2.

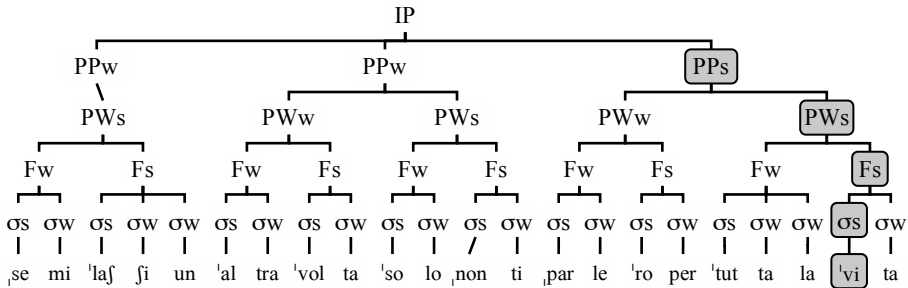


FIGURE 9. SIGNAL 2: METRICAL TREE.

A perception test has been carried out. The original PROMs of the natural signals (i.e. the functors of the relationship which establishes the macro-IN) have been manipulated, and the manipulated signals have been submitted to 29 Italian subjects. Signal 1 has been manipulated (Figure 10) in order to get a lowering of the F0 on the portion of PPs before the second metrical PROM (in IP2, on *scrivere a un amico* ‘write to a friend’); this should bring the listeners to move forward the final boundary of IP1, and induce, by contrast, the perception of an intonation PROM on the second

metrical PROM (on *lontano* ‘faraway’). The expected perceptive result is to change both the IP and the syntactic structure of the utterance (after *amico* a final IP boundary should be recognized: *lontano* should be considered as an adverb [out, abroad] and no more as an adjective [faraway]). Despite the manipulated signal sounds quite unnatural, the subjects recognized a change in the linguistic interpretation of the sentence.

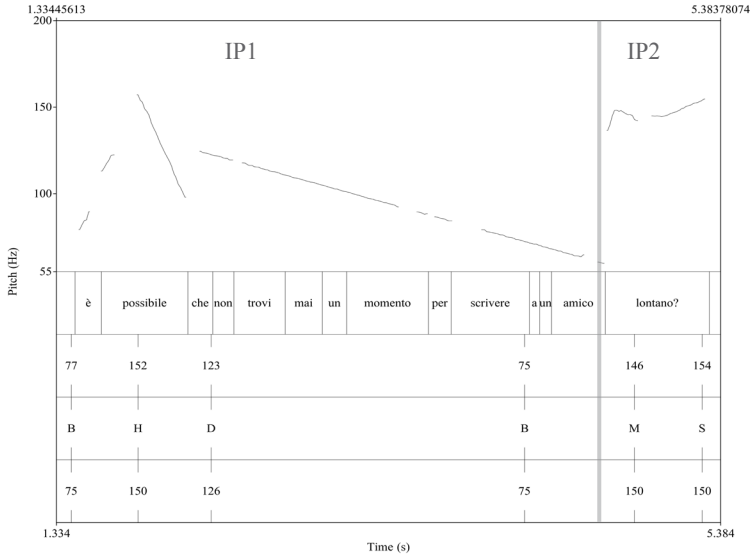


FIGURE 10. SIGNAL 1 MANIPULATION: F0, TRANSCRIPTION, FREQUENCY IN Hz, INTSINT.

Figure 11 shows the tonal grid of both the natural and manipulated signal 1. As you see, the second intonation PROM has been moved forward.

Signal 2 has been manipulated (Figure 14) in order to get a lowering of the F0 at the end of the second PPw (on *altra volta* ‘again’); a continuous raising of the F0 values along the PPs (on *parlerò per tutta* ‘[won’t] talk [to you] for the rest [of my life]’), which attains the maximum value on the metrical PROM (on *vita* ‘life’); and a raising of the F0 values on *solo* ‘alone’ in order to induce the perception of a tonal resetting. These manipulations would trigger the listener to put: an IP boundary before *solo*, and a metrical PROM at the end of the new IP1 (on *volta*). The expected perceptive result is to change both the IP (splitting into two IPs) and the syntactic structure of the utterance (after *volta* a final IP boundary should be recognized, and *solo* should be considered as an adverb [only] and no more as an adjective [alone]). Of course, the metrics of the utterance changes too, as you see in Figures 12-13. Figure 15 shows the tonal grid of both the natural and manipulated signal 2: a second intonation PROM has been added (in IP2) and it meets a metrical PROM on the same location.

	è	possibile							
			che						
				non trovi					
					mai				
						un momento			
							per scrivere	a un amico	lontano
orig. signal	IP1		IP2						
syntax	VP		Comp	V	Adv	NP	V	PrepP	Adj
metrics		PROM							PROM
INTSINT	M	UHL	S	DUS	S	DU	D U	LU	LULD
intonation		PROM					PROM		
man. signal	IP1								IP2
syntax	VP		Comp	V	Adv	NP	V	PrepP	Adv
metrics		PROM							PROM
INTSINT	B	H					B		MS
intonation		PROM							PROM

FIGURE 11. SIGNAL 1: TONAL GRID.

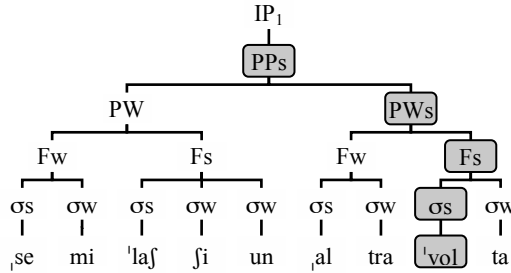


FIGURE 12. MANIPULATION OF SIGNAL 2: NEW METRICAL TREE OF IP1.

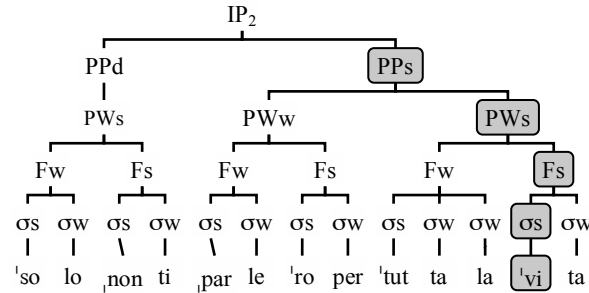


FIGURE 13. MANIPULATION OF SIGNAL 2: NEW METRICAL TREE OF IP2.

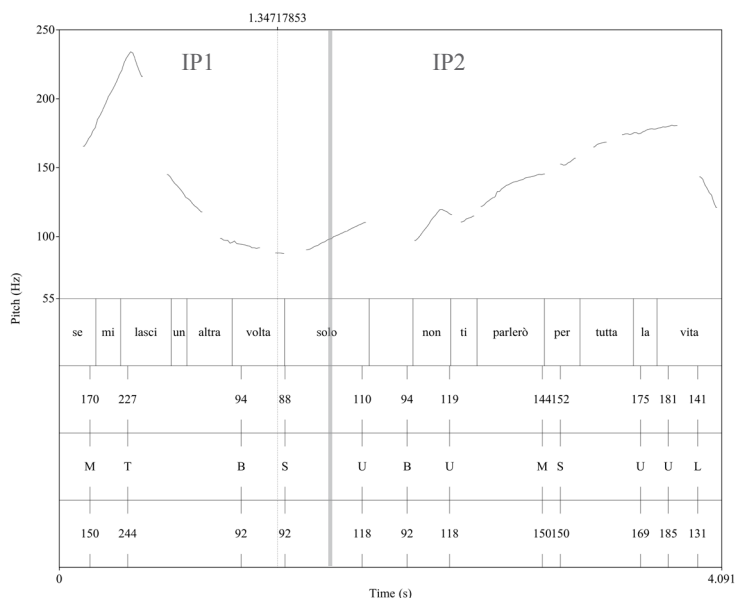


FIGURE 14. MANIPULATION OF SIGNAL 2: F0, TRANSCRIPTION, FREQUENCY IN Hz, INTSINT.

29 phoneticians took part in the experiment through Youtube (<http://youtu.be/Ego4gwOYmOg>). According to their instruction on the web, for each signal they had to choose between two situations which give an alternative pragmatic interpretation to the signal (see Table 1).

The situations labelled ‘A’⁷ correspond to the pragmatic setting of the original signals; whereas the situations labelled ‘B’⁸ refer to the expected pragmatic conditions which should be inferred from the perception of the manipulated signals. Thus ‘B’ is the expected answer in the experimental

⁷ For signal 1 ‘A’ corresponds to: *A friend of Maria lives far away (from Italy). She never answers to his letters, because she says she cannot find the time to do it. But this is only a poor excuse, and Piero realizes it. He blames it on her.* For signal 2 ‘A’ is: *Maria is a colleague of Piero. They work at the counter of a public office. At some point, unexpectedly, Maria is out of office, and Piero has to deal with the public, all alone. For this reason, when Maria comes back to the office, Piero tells her that if she leaves him alone one more time, then he will never addresses her again.*

⁸ For signal 1 ‘B’ is: *Maria lives far away (from Italy). Piero is one of her Italian friends and he always send her some letters. But Maria never answers. During a call, she says she cannot find the time to answer, and she explains she never writes to anyone since she is far away from Italy. But this is only a poor excuse, and Piero realizes it. He blames it on her.* For signal 2 ‘B’ is: *Piero asked his friend Maria to go with him to the flea market. The market is very crowded, and Piero doesn’t like to be alone. But Maria always walks away from Piero. After asking her not to go away, over and over again but in vain, Piero has enough and sets an “ultimatum”: if it will happen again, just once, then he will never addresses her again.*

setting. In particular, as for signal 1, situation ‘B’ changes the syntactic structure of the original utterance because *lontano* is considered as an adverb (out, abroad) and no more as an adjective (faraway, apart). As for signal 2, situation ‘B’ changes the syntactic structure of the original utterance because *solo* (alone) is considered as an adverb (only, just) and no more as an adjective.

	se						
		mi					
			lasci				
				un'altra volta			
					solo	non ti parlerò	per tutta la vita
orig signal	IP1						
syntax	Conj		VP	Adv	Adj	VP	PrepP
metrics							PROM
INTSINT	T	D	T	LH	HB	M U DH	BHBS
intonation			PROM				
man. signal	IP1				IP2		
syntax	Conj		VP	Adv	Adv	VP	PrepP
metrics				PROM			PROM
INTSINT	M		T	BS	U	BUM	SUUL
intonation			PROM				PROM

FIGURE 15. SIGNAL 2: TONAL GRID.

8. RESULTS AND DISCUSSION

The results for both signals support the hypothesis of the multiple prominence model: deleting the original prominences (and/or inserting new ones) changes the model of their interface, i.e. the relations among them, and the constituency of the macro-IN (the location and the number of IPs & INs). This triggers a change in the linguistic well-formedness of a speech utterance (i.e. the morphosyntactic identity of the sentences). As a consequence, the subjects' perceptive judgments shift to a different linguistic interpretation of these signals.

Subject	Sex	Age	Provenance	Answers	
				Signal 1	Signal 2
S1	M	>60	Sardegna (Campidano)	B	B
S2	F	37	Napoli	B	B
S3	M	47	Trento (born in Udine)	B	B
S4	M	63	Torino (born in Reggio Calabria)	A	A
S5	F	31	Pisa	B	B
S6	M	41	Torino	A	B
S7	M	31	Pescara	B	B
S8	F	29	Prato (born in Matelica, Macerata)	B	B
S9	M	40	Treviso	B	A
S10	M	27	Trento (born in Verona)	B	B
S11	F	30	Lecce	B	B
S12	F	56	Pisa	B	B
S13	F	37	Pisa	B	B
S14	M	52	Roma	A	B
S15	M	49	Padova	B	A
S16	F	27	Vercelli (born in Biella)	B	B
S17	M	72	Roma	B	A
S18	F	65	Napoli (born in Lecce)	B	A
S19	M	35	Bolzano (born in Giulianova)	B	B
S20	F	39	Lyon, France (born in Firenze)	B	B
S21	M	53	Trento (born in Verona)	A	B
S22	M	53	Salzburg, Austria	B	B
S23	F	38	Firenze	B	B
S24	F	62	Portici (Napoli)	A	B
S25	F	41	Alessandria (born in Cremona)	B	B
S26	F	48	Lecce (born in Torino)	A	B
S27	F	44	Napoli	B	B
S28	F	35	Viterbo	B	B
S29	M	65	Roma	B	B
Total				A = 6	B = 23
				A = 5	B = 24

TABLE 1. RESULTS OF THE PERCEPTIVE TEST AND CLASSIFICATION OF THE SUBJECTS.

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Amedeo De Dominicis

Dipartimento di Scienze Umanistiche, della Comunicazione e del Turismo (DISUCOM)
Università della Tuscia
Via Santa Maria in Gradi 4, I-01100 Viterbo
Italy
e-mail: dedomini@unitus.it