Luciano Canepari (2017)

Natural Tonetics

Microstructures (mostly syllables, stress, and tones)
Macrostructures (mostly intonation)
Superstructures (with paraphonic intonation, as well)

\[\text{canIPA Natural Tonetics}\]

from §§ 12-14 of the book
Natural Phonetics & Tonetics
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Natural Phonetics & Tonetics
Articulatory, auditory, & functional

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12. Microstructures
(mostly: syllables, stress and tones)

Syllables

12.1. The syllable is a phonetic reality (both in an auditory and an articulatory sense), which is present in the linguistic consciousness of all people, no matter what language or dialect they speak, and whether they are literate or not. It is the fundamental unit of the spoken language – the smallest one capable of constituting an utterance by itself, such as Yes or Here, &c.

A syllable is made up of one or more phonic segments, which have a good deal of cohesion and coarticulation among one another. Syllables are also the groups into which we instinctively separate words, when we are speaking on the phone and the line is very bad (because of problems with static or interference).

For purposes of scientific analysis and description, it is normal to consider single segments (ie phones) as the minimal units of phonetics, such as m, p, b. And it is even possible to work on the level of components (or phonetic features), such as bilabial closure for m, p, b. However, actual speaking is carried out through full syllables (even if the syllables are made up of only one –short– phone, as in the Italian words e, o, a [e, o, a] ‘and, or, to/at’), whether these are stressed or not. The smallest isolated forms in English can be words such as a, I, owe, awe, ah, which are diphthongs or long vowels [æ, ɔə, ɔə, ɔː, ɔː], but in connected speech a is [ə].

Syllables make up in turn part of larger groups, constituted by sequences of syllables linked together by phenomena of assimilation or coarticulation: rhythm groups (or stress groups).

In a rhythm group, one syllable has greater prominence with respect to nearby ones. The number of syllables making up a rhythm group can vary (depending on the speed of speaking and the particular message, as well as the language in question) from one syllable to around ten, with an average of 3-6 syllables per rhythm group.

12.2. The syllable can be considered as the result of the coordinated movements of the respiratory, phonatory, and articulatory mechanisms. Increases in general muscular tension, in expiratory pressure, in phonatory energy, and in the opening of the articulatory organs converge together.

These increases are followed immediately by corresponding reductions in the various areas. This is the point of view of production (ie the speaker); while from the point of view of perception (ie the listener), everything becomes transformed into sound waves, which travel to the auditory mechanism of the listener.

It is important that we clear up, once and for all, that phonetically the concept of a ‘syllable’ is rather different from that of grammar (not to mention poetic meter)! It is therefore essential to distinguish between syllables in a traditional sense
(graphic syllables) and natural phonic syllables. For this reason, it is entirely useful to speak of phono-syllables and grapho-syllables. In Italian, we can exemplify the difference with the word festa, with syllable division /fes-ta/ (phonic) and fe-sta (graphic). It ought to be unnecessary to mention the absurdity of the grammatical syllable division, given that the pronunciation is unmistakably /fes-ta/.

However, it is very difficult to defeat noxious scholastic ‘beliefs’, since they are inculcated at an early age. Grammarians and poets have, for centuries, convinced people that words like Italian mai rightly have only one syllable, whereas others, like mia, have two! Scientifically, there is nothing which is farther from the truth! In fact, we have: mai /ˈmai/ [ˈmaːi] and mia /ˈmia/ [ˈmiːa] (at the end of a line of verse, as well).

It is so simple and natural. Yet, in schools the official ‘story’ is that mia, mie, mio have two syllables (because they are made up of mi- and -a, -e, -o respectively), whereas the more ‘solid’ miei has only one, because it does not alternate with other forms! In reality, there is only one phono-syllable in all of these cases: /ˈmai, ˈmie, ˈmio, ˈmjɛi/ [ˈmiː, ˈmiː, ˈmiː, ˈmjɛi].

Scale of syllabicity

12.3. Within each phono-syllable, there is a considerable degree of correspondence between the openness or closure of the phonoarticulatory organs (ie phonic production) and the scale of syllabicity of the different phones (ie auditory perception of the sound wave). In fact, under equal conditions of stress, length, and pitch, the more open and more voiced phones are more perceptible (in other words, they are audible at a greater distance, % more distinctly). Clearly, in order to test this condition, a notable distance should be considered. In fact, if the distance involved were too close, it would be possible to get the impression that [ʃ] is more ‘sonorous’ than [a], particularly thinking of the ‘example’ of shh!, which is capable of getting a whole room full of people talking in groups to be quiet.

However, listening carefully (and if we look, also carefully, at a good transcription), we can see that shh! normally corresponds to [ʃʃʃ], in short something quite a bit different from just [ʃ]. This last would be plain, ‘non-syllabic’, voiceless, and short, without any particular stress –even wishing to transcribe it as [ʃ]– and in any case, without pitch, since the vocal folds do not vibrate. Here, however, a simple –‘egalitarian’– [ˈa] is definitely much more perceptible (especially at a distance of 30-50 feet).

At this point, we need to make a brief terminological and conceptual digression, because, as could have been expected, the worst term imaginable (namely, ‘scale of sonority’) is also the most widely used, in the scientific literature as well. It is true that we are speaking of more or less ‘sonorous’ sound waves, but this in the very generic sense of phonic emissions, or in other words, actual utterances. Utterances are naturally composed of voiced phones, but also of voiceless ones, so there are a few problems here.

It would be a step in the right direction to get rid of the other expression (which
for a while seemed to us to be reasonably appropriate), namely ‘scale of perceptibility’. Although this term does not have the inevitable ambiguity inherent in ‘sonority’, it still runs the concrete risk of provoking the misunderstanding discussed above. In fact, it is fundamental to remember that absolutely equal conditions of stress, length, and pitch are required.

12.4. Therefore, it is more appropriate—and even necessary—to speak of the syllabicity scale. Given the phones making up a particular utterance, the purpose of this scale is to make it possible to pick out the individual syllables. The division into syllables of an utterance is determined by the syllable nuclei (the maxima, the heights, the peaks, the apogees), in their contrast with syllable boundaries (the minima, the depths, the troughs, the perigees), where the actual division takes place.

With these considerations in mind, phones produced with greater articulatory (mouth and jaw) opening are more ‘perceptible’ (and consequently more apt to constitute the nucleus of a syllable) than ones with less opening. The same is true of phones with voicing (ie vibration of the vocal folds), with respect to voiceless ones (ie without this vibration). Along the continuum between voiced and voiceless phones, syllabicity diminishes constantly through the intermediate phases: voiced, voiced lenis, mixed, voiceless lenis, voiceless.

We therefore present now the syllabicity scale (going from the greatest to the least, cf fig 12.1). Every phonic syllable is, therefore, constituted by phones grouped together according to this scale, in such a way that the most perceptible ones (ie the syllabic nuclei) are in the center, while the less perceptible ones (ie the syllabic margins) are on the boundaries.

fig 12.1 Scale of syllabicity (with some examples).
1. First group: vocalic
   open vocoids: [æ, a, ə; ɛ, ɔ; ɨ, ɨ; ă, ă, 5]
   mid vocoids: [e, ə, o; ɛ, ɔ, ɨ, ɨ, 5, 5]
   close vocoids: [i, i, ʊ; i, i, u, ɪ, ɪ, ʊ]
   intense («syllabic») contoids: [m, n, ɲ, j, ʒ, ʒ]

2. Second group: sonantic
   median or lateralized approximants: [j, ʒ, ʃ, w; r, ɹ]
   trills, taps, flaps: [r, ĵ; r, ɹ; ɹ, ĵ, ɹ]
   laterals: [l, ļ, l, ɬ; ɹ, ɹ]
   nasals: [m, n, ɲ, ŋ, ɲ, ŋ]

3. Third group: consonantic
   peripheral approximant: [β, v, ɹ; ɹ; ɹ, h]
   constrictives: [v, ɹ, z, ʒ, ɣ, k]
   stop-strictivies: [dʒ, ə, d, ʒ, ɬ, ɡ, ɡ]
   stops: [b, d, ɬ, d, ʒ, ɡ]

4. Fourth group: non-sonantic
   vocoids: [i, ɯ, u, j, ɬ, ɛ; ɚ, ɚ]
   sonants (or sonorants): [ɛ, ɹ, ɹ; l, ɬ, ɦ, ɲ, ɿ]
   continuant (approximants/constrictives): [ʃ, ɾ, ɿ, ʃ; f, s, j, x]
   momentary (stops & stop-strictives): [p, t, tʃ, kʃ; p, t, t, k]
In most cases, there are no problems, and the syllables form units with perfect internal coherence around the nucleus, moving from the most marginal phones (in both directions): blank [blæŋk], cleft [klɛft], ground [ɡraʊnd], final [faʊnal], written [ˈwriːtən], Italian: quando [ˈkwano], tronfio [ˈtronfiːo], German: Esel [ˈzɛl], haben [ˈhabeŋ], Czech: Petr [ˈpɛtr], krk [ˈkrɛ], vlk [ˈvlɛk].

12.5. In all languages, however, there are cases occurring more or less frequently in which this order is not fully respected: splash [ˈsplæʃ], six [ˈskiː], mere [ˈmɛr]; Italian: sta [ˈsta], sberla [ˈzberˈla], mia [ˈmiːa]; German: Stadt [ˈʃtat], Pëtr (Piemp) [ˈpɔtˌtʃ], Quảng [ˈkwæˀ], en [ˈeŋ], unless (as in English) the lexical syllabic structure does not take precedence: a splash [ˈspʌlʃ], six eyes [ˈskiːz].

From a phonetic point of view, however, every part not divided by a hyphen (or by a space) is a syllable. In fact, even though [s, z, ʃ] are more perceptible than [p, b, t], and [æ, a, ʌ] are more so than [i, ɪ, ʊ], &c, we have no division into distinct phonetic syllables, provided that the elements in question belong to the same sub-division, out of the four in the scale, ie vocalic, sonantic, con-sonantic, and non-sonantic (note Latin consonare ‘to sound together’, since con- = ‘with’). The preceding is true as long as there is no increase of stress present. In fact, in [ˈja, iːa], the first sequence constitutes a single syllable, while the second sequence constitutes two different syllables. As we have seen, there is just one syllable in Italian mai /ˈmɛi/, vuoi /ˈvwɔi/, miei /ˈmiːi/, and even in mia /ˈmiːa/, or in British English mere /ˈmɛr/. This is true because, even though [i, a] have different levels of openness ([i] is closer than [a], and less ‘perceptible’, but it functions as a nucleus), they are both part of the same group: the vocalic. However, in the Italian of Naples (in a tune), we have two or three syllables in these cases, due to stress differences: mia /ˈmiːa/, mai /ˈmai/, vuoi /ˈvwɔi/, miei /ˈmiːi/.

12.6. Let us consider some examples from English: few [fjuː], Swiss [ˈswiː], piano [ˈpiːnoʊ, ˈpiːnoʊ], situation [ˈsɪtjuərən], cooperative [ˈkɔoperətəv], co-op [ˈkɔʊərop]. In English as well: splashed [ˈsplæʃt] and sixth [ˈsɪkθ] form only one syllable, because /sp, ks/ belong to the same group: the non-sonantic; all of this even though [s] is relatively more perceptible than [p, k]. The same is true of [ˈkɔʊərop].

In French, words such as quatre, peuple /kαtʁ, ˈpœpl/ are monosyllabic, because [χ, l] are voiceless just like [t, p]: [ˈkatʁ, ˈpœpl]; they are therefore in the fourth group (non-sonantic). Moreover, double [ˈdʌbl] is monosyllabic too, because [l], being voiceless (and non-sonantic), is less perceptible than [b] (in the third group, con-sonantic). If voicing is preserved (as would be expected phonemically), we have, instead, bisyllables: [ˈkatʁ, ˈpœpl, ˈdʌbl] (native speakers can even utter [ˈcatʁ, ˈpœpl, ˈdʌbl], still as two syllables, especially in protunes), as in Russian too, for the variant Piemp [ˈpɔtˈtʃ], even though here the voicing is only partial.

In Japanese, voiceless (lenis) vocoids are still capable of constituting the syllabic nucleus, because the nearby contoids are completely voiceless and consonantic (and are therefore less perceptible, even while being part of the same group, ie non-
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-sonantic: kite [kIœ-tœ] /kite/ (or /kite/, of a different meaning, cf § 12.2.6.2 in HPr). The Japanese auxiliary form desu /de-su/ is bisyllabic until it remains [-desu], but it generally becomes monosyllabic [desu, des].

Therefore, even while whispering (ie with voiceless lenis phonation), syllables remain intact, as is well-known. In fact, even if the message as a whole is less perceptible than one in a normal voice, the same differences in the scale mentioned above remain valid. When pronounced, a voiceless lenis, a vocoid, or an intense contoid, is still more audible than any other (normal or ‘non-syllabic’) voiceless contoid, whether lenis or not. The reader should try whispering, for example: Yes, you’re right – Oui, t’as raison – Sì, por supuesto – Sì, esatto.

Syllabication (or syllabification): division into phono-syllables

12.7. In different languages, phonic syllables take more or less different forms, because they depend upon the phonological systems present, and on the languages’ phonotactics (ie which combinations are normal or possible). Differences involve the number, order, and type of segments allowed, as well as the way in which syllabication is accomplished.

Within considerations of general phonetics, there are certain possibilities, which are more frequent and ‘normal’, and therefore defined as unmarked. These facts should be omitted from transcriptions, except in order to show intentionally the differences between an unmarked syllabification and other ones. It is, instead, important to note cases of marked syllabifications: those which are less frequent (or ‘normal’) in the languages of the world. In ordinary transcriptions, even these syllabifications can be possibly omitted, if they have been adequately explained. However, it should be emphasized that correct syllable division is very important for describing and pronouncing a given language well. Sometimes, it is neither easy nor simple to determine and perceive where the boundary between two phonic syllables is located, because of coarticulation, too, not only in unstressed syllables.

As we have mentioned, syllabic nuclei contain a notable amount of internal cohesions, which can also include coarticulatory transitions between the boundary elements of the single nuclei. The reader should remember that there is no real break between one syllable and the next (whether the boundary is marked with a hyphen or not), but a mere lessening of energy. It is important to carefully consider cases with a simple contoid (preceded by a stressed vocoid which remains phonetically short, and followed by vocoids, or by [central, lateral, trill, or nasal] approximants), or with a geminate or a lengthened contoid. In this last situation, there are respectable differences between Italian, Swedish, Finnish, and Japanese. A final point is that the hyphen is usually not used when there are prosodic symbols as well (especially for stress or pitch) in the same point, because in such circumstances it would be redundant and awkward.

12.8. Let us now consider some examples: pepper [pœp-œ], paper [pœp-œ], coble [kœø-bœ], [kœø-bœ], unyoke [œp-jœkœ], anew [œnjuœ], penknife [œn-nasœ],
bookcase ['bɔk,keɪs]; Italian: pepe ['peːpe], farò ['faːrə], acre ['aːkre], conio ['kɔnjo], French: chapeau ['ʃapɔ], passer ['paːse], étoile ['etwa], noblesse ['nɔbləs], panier ['paɲje]; Arabic: atraab ['atraab], tanyiil ['tanjil]; Hindi: vaakya ('vaak-ãÉ), adnaa ('aad-na).

Moreover, Italian penna ['penːna], motto ['mɔtːto]; Swedish penna ['fɛnːa]; Norwegian: atten ['atːn]; Finnish tässä [tæːsːæ]; in Japanese, we have motto (§ 12.3.2.1-4 of HPr).

Generally, those contoids, if any, which precede the nucleus of a given syllable have a more energetic articulation than those which follow it. In many languages, including most Germanic ones, stop and stopstrictive contoids occurring at the beginning of stressed syllables tend to be ‘aspirated’: repeat (ræfj), club ('klʌð), chin ('tʃʌn); or German Betrieb (bɛtʁip), kaum (khaom), Pferd (pɛrf).
quences (or other similar ones) occur between vowels % for intense contoids, then the sequences in question generally become split up into different syllables, according to the principles of nucleus and syllabic boundaries perceptibility. In sequences such as /Vsp, spV/, as in spell, wasp, or in Italian sparo, /s/ and /p/ belong to the same syllable (even though the stress mark is inserted between them in Italian, because we have uno sparo [u-nos-pa-ro], cf § 3.3.1.3 of HPr): [sple]; ‘wosp; spª–ro] (Ø 2 of HPr, on English, will explain our use of /IVl/, instead of the ‘traditional’ /IV/ [IVl]). However, in hospital, or in Italian dispari, the phonic syllable boundary is between the /s/ and the /p/: [hos-pª–tª]; ‘dis-pª–ra]. In addition, in an Italian phrase like due strani film americani ‘two strange American films’, we have [d¿es–tra–ni ‘fil–ma ‘me–ri–ka–ni].

The syllables of an utterance can contain variously long vocoid sequences. In fact, sequences of phones which all belong to the first group on the syllabicity scale (i.e vocalic, 1-4, also including the more frequent intense contoids), are not uncommon: you do know who I am [ju’fuimf=#oni(hi)ma#em]; Italian: i suoi autografi [i’sw=cial#uto#gra#fi] (possibly: [ʃ–jau–]); lo direi a Eugenio [lo’di’rei ‘eua’di#s#njo] (possibly: [ʃ–jae–u–]); French: papa a à aller à Auteuil [pa’pa’aar’a#lE#U#l] (also [=”api–, ʃ–api–]).

Phonetically, the English words given below are monosyllabic (whether pronounced with two vocoids and one intense contoid, or with three vocoids, or else with two, or with one only) – the American different variants are added in brackets: towel [θa#], [θa#], hour [‘a,a, ‘a,a, ‘a,s] (Am. [aʊɪ]); fire [‘fa,a, ‘fa,a, ‘fa,a, ‘fa,a] (Am. [fa#]); lower [‘l’o,a, ‘l’o,a, ‘l’o,a] (Am. [lʊ_delay]); employer [im’f#lE#o,# ‘–E#] (Am. [–s#]).

12.11. In languages such as Italian, Spanish, and French, the division of an utterance into syllables takes no account of word boundaries. Therefore, the initial and final contoids of certain words can become part of different, but contiguous phonic syllables. In Italian: un’altra [un=al-tra], non è vero [no-ne#ve=ro], per andare a Roma [pe=ran’da=–re a=ro=ma]; in French: mes amis ont été là [me=za’mi zò=te=te=lA, -za’mi=te=]; in Spanish: los hombres iban al hospital [lo’ñoombre ‘ri=ba na’lo#pital] (with [s] in American Spanish).

Other languages, such as English and German, preserve syllable boundaries, at least to some extent. This occurs especially in the case of stressed syllables. Sometimes it is possible to make semantic distinctions in this way (with varying degrees of consistency), as in these examples: an aim [a=im]; a name [E#n=im]; night-rate [na#–pi#t#, ‘na#]; nitrate [na#–pi#t#]; I can see the meat [a#ks#s#ri ‘ð#mi#t#]; I can see them eat [a#ks#s#ri#d#om ‘m#t#].

The different languages of the world not only have their own ‘sounds’ (and intonations), but they can also have different phono-syllable structures. For example, genuine Italian words (ie excluding recent or lofty borrowings, &c), do not contain sequences of differing CC which do not include /n, r, l, s/. This is because the (Italian) phonological system has assimilated the other sequences, producing geminates: settantotto [settan’toot#] (from se[pt]em and o[kt]o).

The Germanic languages, instead, can have a great number of heterogeneous clusters of CC (and CCC as well), especially in Swedish and Icelandic. Slavic lan-
guages, such as Russian, also have a vast collection of consonant clusters, with their own peculiarities. In Europe, sequences such as /ji, wu/ are generally unacceptable—in English they occur in a very small set of words, such as: yeast, yip [jɪst, jɪp], womb, wolf [wʊm, wʊf]. But in Chinese, for example, /ji, wu/ is normal, for instance: yī, wū [jì, wú].

12.12. We have mentioned (§ 12.1) that the syllable is the fundamental unit in spoken language. Therefore, in phonetic transcriptions the smallest isolated sequence occurring is, in fact, the syllable. This means that when plain ‘non-syllabic’ contoids occur, representing particular allomorphs, they must be joined to nearby vocoids. Cases include the article l’ in Italian and French, or cogemination in Italian (as in a cena [atʃˈʃena], cf § 3 of HPr). Contoids at the beginning (or end of words), which become part of different syllables, should also be joined in this way.

In normal speech, Italians do not distinguish between Lavena, l’avena, la vena. All of them are pronounced [laˈvena] (the only possible difference is that the first form has a variant in /ɛ/ [ɛː]), and therefore the most ‘rigorous’ transcription would be to use the transcription above, in all cases. Possibly, in order to provide help for the learner, it would be possible to use a slur (symbol): [laˈvena, l əˈvena, la ˈvena]. However, it is advisable to limit such expedients (which are quite a bit less useful than might seem) to a sort of explanatory experiment at the beginning of the learning process. Let us look at a similar case in French as well: lavoir, l’avoir, la voir [laˈvwaʁ] ([laˈvwar, l əˈvwar, la ˈvwar]).

Length

12.13. The reader can compare § 6.4.1, where the basic ideas were first explained. The length in time of the articulation of a phone is measurable in hundredths of a second (ie centiseconds – 1⁄100), or thousandths (ie milliseconds – 1⁄1000) but it is sufficient—and more useful—to give relative indications, with respect to an average of 9 1⁄100 per phone, with oscillations ranging from about 6-12 1⁄100. This is, in fact, the necessary length required for adequate perceptibility of short phones, those considered to be of ‘normal’ length (except for taps, which—by their nature—cannot be longer than 3-6 1⁄100 without becoming trills or stops). Short phones have no associated diacritics, and are represented by the simple phonetic symbol [n], since they are just normal. If normal phones have less duration than the short degree, they are defined to be shortened and denoted by giving smaller versions of the original symbols as superscripts: [n]. When, instead, the length is greater than the normal amount, we have half-long, long, and extra-long phones: [nː, nːː, nːːː].

These length diacritics are called semichrones, chronemes, and superchrones, respectively. On a phonemic, distinctive level, we speak of chronemes, as in German: Stadt [ʃta:t], Staat [ʃta:t]. We have already seen that in (British) English, forms like the following ones were transcribed traditionally: ship ‘ʃi:p’, sheep ‘ʃi:p’; look ‘lu:k’, Luke ‘lu:k’; not ‘nɔt’, nought ‘nɔt’; hat ‘ha:t’, heart ‘ha:t’. Since then, transcriptions improved somewhat, giving: ‘nɔt, nɔt, /hæt, hæt/; then an-
other step forward was made, reaching the level of: ‘[ʃip, ʃi:p], /lɔk, luːk/, /nɔt, nɔːt/’. However, we will never get tired of repeating that English ‘[iː, uː]’ are diphthongs (and not long monophthongs), and therefore a transcription like (‘ʃiːp, ‘luːk) is much more appropriate, together with (‘ʃæp, ‘luːk÷ ‘nɔt, ‘nøːt÷ ‘hæt, ‘hæt). In fact, they should have the stress mark as well, even though they are monosyllabic, since other (monosyllabic) words are not stressed in sentence context (as we have said). It is, consequently, important to distinguish forms like in [ɪn] (prep.) from ones like inn and also in (adv.), both [ɪn].

12.14. Distinctive length can also be manifested as gemination, especially for consonants, but also for vowels (in which case, there may even be a diphthong, whether mono-timbric or di-timbric, as has been seen in the case of English [iː, ʏu]): part-time [ˈpaːrtʰtʌim, ˈpaːrtʰtʌɪm], part-time job [ˈpaːrtʰtʌɪm ˈdʒɒb], that time [ˈdʒætʰtʌɪm] (in modern Germanic languages, consonant gemination occurs only in lexical composition, or in sentence context): Italian: cade [ˈkaːde], cadde [ˈkaːdde]; ero [ˈɛro], erro [ˈɛro]; Japanese: gaka [ɡə-kə], gakka [ɡək-kə]; toki [ˈtoʊki], tooki [ˈtoʊki]; Tamil: paḍu [ˈpaːdu], paḍu [ˈpaːdu]; kanam [ˈkaːnəm], kannam [ˈkanəm]; Hungarian: vár [ˈvaːr], var [ˈvaːr], varr [ˈvaːr]; Russian: žat’ (жать) [ˈʐaːt], žat’ (жать) [ʐaːt].

A large number of languages use the length of particular segments distinctively, within their particular phonological system. In Arabic, Hausa, Hindi, Tamil, Hungarian, Finnish, and Japanese, for example, both consonant and vowel length are distinctive. Other languages, among which Italian, Bengali, Punjabi, and Amharic, use only consonant length for purposes of distinction. Still other languages, among which generally the Germanic ones, have phonemic opposition between short and long (or diphthongized) vowels. There are also languages such as Spanish, Romanian, modern Greek and Hebrew, Indonesian, and (Mandarin) Chinese, which do not use length distinctively, even though they can naturally have segments which are pronounced with a certain length for phonetic, phonostylistic (ie expression), or paraphonic (ie emotion or health) reasons.

Two levels of (vowel or consonant) distinctive length are more than sufficient, in the languages of the world. In fact, what are supposed to be three distinctive levels of length in Estonian and Lapp are simply combinations of the two basic types. Examples from Estonian include: jama [ˈjamə], jaama [ˈjaːma], jaama [ˈjaːma], kabi [ˈkapəi], kapi [ˈkaːpi], kappi [ˈkap-pi].

Particularly in those languages which use pitch distinctively, there is a frequent use of morae (singular mora), which are the minimal units of length (Greek μόρα ‘division’). These units correspond to a short, or light syllable (such as /a/). A mid, or medium, syllable has two morae (made up of two vocalic elements, or of a long vocalic element, or of a short vocalic element followed by a consonantal one, which in turn may be normal –voiced or voiceless– or ‘syllabic’ (intense), as for example /aa, aː, an, an, ad, at/). A long, or heavy, syllable has two vocalic elements and one consonantal one, or instead one vocalic and two consonantal ones (/aan, an, aan, an, ann, and, ant/).

In the systematic description of a language (and, better yet, while comparing
multiple languages or regional accents), it could be useful to use a diagram which does a better job of showing the value of every symbol of length (every chronetic symbol). Therefore, beginning with the more specific symbols (already listed in § 11.21), we give the chronogram as well (in fig 12.2). For a level of (phonetic) length less than those of the three fundamental degrees, [a, a’, a:], it is possible to use the three supplementary slightly reduced levels, [[a], a., a:]], respectively. We simply provide the diagram, with two possible types of scales to represent facts concerning length (their use can be easily intuited, even if they are not directly applied here).

In any case, we observe briefly that in Italian (respect to German, for example), it might be considered desirable to use [[]]: bene, male /bene, ‘male/ [[bene, ‘male] instead of [bene, ‘male]. Or in Spanish protunes, one could use [[]]: quiero hablar /kjerø a’bler/ [[kjerø a’bler]], instead of [kjerø a’bler]. Finally, in American English (especially mediatic [treated in § 2.4.2.1-5 & § 2.5.2.4 of our HPr – A Handbook of Pronunciation]), it could be considered desirable to transcribe heat˚ short as (‘hit, ‘hit‘ Sø ; < T), instead of (‘hit, ‘Sø ; < T) (in neutral American pronunciation, we have: [‘hit, ‘Sø ; < T]).

fig 12.2. Chronograms to show different degrees of length.

Pitch & tones

12.15. The melodic height (and movement) on a syllable is called TONE (cf § 6.4.4). Pitch is primarily determined by tension and vibration of the vocal folds and of the whole larynx. The more the folds are tightened or loosened, the more pitch becomes higher or lower. The effect can be accentuated by increasing the pressure of expiratory air and by raising the larynx; on the other hand, it can be diminished by reducing the pressure and lowering the larynx.

Pitch range is individual and relative, not absolute – to see this, it is enough to consider the notable differences between the average voices of men (low), women (mid), and children (high). Moreover, within each of these classes, there are innumerable possibilities for variation, including juxtapositions and exchanges from one class to another. See fig 6.17-18 and the tonograms from the phonosyntheses of tone languages (ie languages with ton[em]es), as well as fig 11.10-20 & fig 12.3-6 in HPr, for Mandarin Chinese and Japanese.

The range of pitch can be usefully divided into three juxtaposed bands: high, mid, and low. Of these three, the two bands on the ends are marked, while the central band is ‘normal’, neutral, unmarked. Thus in the mid band, no particular symbols for tones could be required, and so [’$, $, $, $, $] might indicate syllables with mid tone and, respectively, extra-strong, strong, medium, weak, and reduced stress.
However, for tone languages, it is more advisable to expressly use more appropriate tonetic symbols, in order to clearly show both heights and movements, as we will see below.

In non-tonal languages, [%] is not to be marked; however, in tone languages, it is better to mark it (even though it would not be rigorously necessary), in order to give more objective and complete descriptions. So, in the high, mid, and low bands, the following are used, in order: [%$, %?, %, %$], [%$, %, %$] and [%$, %, %, %$]. (Note that we also use [.] to indicate lack of stress–unstressed elements– and [·] for loss of stress–destressed elements– in certain phonic formulae, especially in vocograms.)

These are the level tones, which remain within one of the three bands (even if they are not necessarily completely horizontal – as occurs in many languages). In order to mark clearly intermediate tones with different degrees of stress, the following are used, respectively: [%$, %, %$] (half-high) [%$, %, %$] (half-low).

Here we have, clearly, two tones (and two different levels of pitch, in the case of intonation), which are supplementary, added to the three fundamental types. They are used only for level tones (or at least which tend to be level, and can also be used for attenuated or flattened forms of the kinds of tones which we will soon see [ie gliding tones]). But they are not necessarily to be considered as forming a contiguity scale with the other three, enough to require modifying the subdivision of the tonetic range into five bands.

They could be considered as ‘special’ (or specialistic) symbols to be put in [ ]], and to be used mostly when there is a desire to be more specific, avoiding limitation to just the canonical types. In fact, in tonemic transcriptions, one normally tries to use the three fundamental ones as much as possible.

12.16. The tones which within a single syllable pass from one band to another are called gliding tones, and they are marked as rising or falling. They occur on two levels: high–low, with three levels of stress: extrastrong, strong, and mid: [%$, %, %] [%$, %, %] (rising, mid-to-high and low-to-mid respectively) and [%$, %, %], [%$, %, %] (falling, high-to-mid and mid-to-low, respectively).

Slightly rising or falling tones, with a shorter movement around the low and mid or the mid and high levels are called semi-rising and semi-falling, respectively mid-high and low-mid or high-mid and mid-low, and indicated as [%$, %], [%$, %].

Naturally, there are also compound tones, which are derived from combinations of movements in different directions, or from wider movements. Formerly, they used to be marked by adding a dot, or two, at the appropriate height, eg: [%$, %, %], [%$, %, %]. But, especially when systematically working on the description of tone languages, it is decidedly more convenient to use unitary symbols, such as, respectively: [%$, %, %, %] [%$, %, %, %], &c. Here is a fairly complete (though still increasable) set of symbols for the principal compound tones (presented with general, average, values and movements): [%$, %, %, %, %, %, %, %, %, %, %] (cf. fig. 12.3 & fig. 12.5). Of course, it is convenient to use some of them even in intonation, for the tonic compound syllables of certain tunes.

Many languages of the Far East, such as Chinese (ie Mandarin, Cantonese, &c),
Vietnamese, Thai (or Siamese), and Burmese, have tonemes (i.e., distinctive tones) on every syllable (or almost every syllable). These tonemes can be of various types: compound, gliding, or level. Sometimes, they are also accompanied by particular phonation types, such as creaky voice (or laryngealization), or breathy voice (or lenition).

In African languages, such as Yoruba, Ewe, and Hausa, level and gliding tones (and tonemes, of course) prevail (often the gliding ones are combinations of two level tonemes). In other languages, such as Swedish, Norwegian, Croatian, Serbian, and Japanese, various combinations of pitch and stress on different syllables of the word, or rhythm group, determine the marked forms in comparison with the unmarked ones.

Normally, two different tonemes on elements which form a single syllable (with $/\text{V}; \text{VV}, \text{VN}/$) assimilate one another. This occurs, for example, in Japanese: $\text{kondo} \; [-\text{kon}, \text{do}] \;(//\ldots//)$, which shows a moderate change from mid to low levels.

![fig 12.3. Principal tones: symbols and tonetic characteristics.](image)

Of course, slightly different shapes are quite possible and normal, depending on languages and accents (as, also in vocograms, the exact positions are not at all alike and fixed).

The tonograms in fig 12.3 only show the tones uttered with a strong stress $[-\ldots-\ldots] \; [\ldots\ldots] \; [\ldots\ldots\ldots]$ (here we give only the first three series). But, different degrees of stress are also possible, as we already know. Thus, three slightly less strong series are $[-\ldots-\ldots] \; [\ldots\ldots] \; [\ldots\ldots\ldots]$. The correspondent signs for a secondary stress are $[-\ldots\ldots] \; [\ldots\ldots] \; [\ldots\ldots\ldots]$. For a weak stress, we have the following five positions $[\ldots\ldots\ldots]$. An emphatic stress has $[\ldots\ldots\ldots] \; [\ldots\ldots\ldots] \; [\ldots\ldots\ldots\ldots]$. While milder emphatic series are $[\ldots\ldots\ldots\ldots] \; [\ldots\ldots\ldots\ldots\ldots]$. As we said, these degrees of stress are possible with any other tones.

For instance, in Mandarin Chinese, we can certainly have (showing only the basic tonemes, without taxotones – with emphatic (or extrastrong), normal (or strong, or primary), and medium (or secondary) stress: $\text{T1} \; [\ldots\ldots], \; \text{T2} \; [\ldots\ldots\ldots], \; \text{T3} \; [\ldots\ldots\ldots], \; \text{T4} \; [\ldots\ldots\ldots]$.
12.17. In order to work with intonation (and tones), it is important to be acquainted with pitch, which is simply the height and melodic variation of speech (in one syllable at a time, stressed or unstressed). Pitch is determined by tension and vibration of the vocal folds and of the entire larynx.

The more the folds are tightened, the higher the pitch becomes; naturally, when they are loosened, the pitch becomes lower. The effect can be accentuated by increasing the pressure of expiratory air and raising the larynx. In the same way, the effect can be attenuated by lessening the pressure and lowering the larynx. At this point, it is absolutely indispensable for the reader to take a bit of time and investigate this mechanism.

It is necessary to become precisely aware of the correspondences between pitch movements and glottal tension and position (in the vocal folds and larynx). It goes without saying that the task can become appreciably easier if the reader records the attempts and listens to them calmly and repeatedly, possibly working with very small snatches of the recording at a time (and therefore pressing the pause button often). In the beginning, it will be enough to make any sort of attempt whatsoever, to try to pass from one pitch to another, perhaps with big jumps to perceive the differences better. Afterwards, however, it will be necessary to work more systematically, attempting to execute more gradual and planned movements, after having accurately written them down.

The attempts should be carried out (whether planned ahead or not) by saying into a microphone what is meant to be recorded (or, more prudently, what has actually been recorded, since intentions are one thing, but actions are another). In this way, it is possible to compare the actual execution with what was planned. These exercises should be organized so as to cover the full range of possibilities, from static pitch levels to various types of different and combined movements. Stress and length differences can be added as well.

At the beginning, it will be unquestionably necessary to plan on fairly long practice, with many repetitions. After covering the various combinations of pitch level and gradual movement which are possible, one should then move on to identifying one’s own intonation characteristics.

12.18. It is clearly necessary to proceed while constantly recording oneself, and particularly to do so without becoming overly depressed. Discouragement often comes from hearing one’s own voice and one’s own pronunciation characteristics (which at the beginning can be a rather unpleasant experience), as well as from the feeling of not being able to do anything decently. We hear our voice on a cassette recorder—or, nowadays, from a computer sound file—in a different way than we are accustomed to hearing it. In fact, when we hear our own voice, we hear it not only from vibrations in the air, but also from vibrations which propagate through the bones of the skull, directly from the phonatory mechanism to the auditory one.

As for the other problem—our apparent perceptual and productive limitations—it is enough to remember that we are not at all used to efforts of this type, and therefore they require time and personal commitment. The tonograms of \( \text{ð} \) 6 & \( \text{ð} \)
12. Microstructures

13 (fig 6.17-21 & fig 13.1-9) will certainly be of help, as will the phonosyntheses of \( \theta \) 16-23, or those in \( \Theta \); they are not at all superfluous, nor useless, nor inaccessible, either. It is sufficient to work at them without superficiality and without distrust — they will more than repay the effort!

The pitch range (that is, the full range from the highest pitch to the lowest pitch), therefore, is individual and relative, not absolute. As we have pointed out in § 12.17, there are noteworthy differences between the voices of men (generally low), of women (higher), and of children (still higher, cf fig 13.1), and there is a great range of variation even with respect to these norms. Each person must put a bit of effort into discovering and analyzing his or her own pitch range, which is more limited in extent than the range in singing.

Working as always with a computer sound program — or a tape recorder — the reader should be recorded while speaking ‘spontaneously’. That is, one should not just read a written text chosen at random, but pronounce various words and sentences of different types, uttering them, however, as if they were occurring in natural conversation. For this purpose, the examples from fig 13.2.1 would work very well (although they represent just neutral British English intonation); they will, then, need to be listened to repeatedly, both as a whole and using the pause button to segment them. Of course, for other accents and languages, it would be a very nice thing to be able to rely on the corresponding curves. Many such curves, on tonograms, are already available from our books. Others can be found in some pdf files freely downloadable from our web site. Many more are appearing either in our site or in our books.

It will, then, be important to focus on the various details, which as the exercises proceed, will come out more and more clearly and seem more and more obvious, even if they went completely unnoticed at the beginning. It is necessary to learn to listen to every single characteristic and to every component and variation, independently from the others, simultaneously present. The characteristics are woven together in a sort of tangled web, which is however harmonious and even melodious.

In fact, the reader must succeed in hearing, not just the entirety and not just generalities, but also in listening to the single characteristics, perceiving as many details as possible. Something similar occurs while listening to a full orchestra: it is possible to hear the music as a whole, but it is also possible to learn to recognize — and savor — every individual instrument.

All in all, the same is true of all phonetic characteristics. The only difference is that tonetic characteristics are effectively more complex, and therefore require a greater commitment.

12.19. After the initial experiments for discovering one’s own pitch range in speech, the reader should choose sentences in which all the vowels are the same (phonically as well — thus, in Italian for instance, it is important to avoid mixing together \( /e, \epsilon / \) and \( /o, \o / \)). Possible examples for Italian include: Quindici bimbi simili di Rimini, or Per prevedere tre ser ve vere, or Sono molto forforoso, or possibly Mangia la patata salata, or Sara sarà andata armata da Catania a Malaga (with \( [\text{ma~:Ga, ka'ta:nja}] \)).

These sentences will not necessarily be among the most normal or probable in
conversation. However, the fact of having all of the vowels of the same quality in all the syllables is a great help. The reason is that in this manner, we avoid the risk of being misled by the different pitch intrinsic to the different vowels (even if acoustically different contoids can influence vocoids to some extent).

Therefore, the reader can proceed at this point with less difficulties, modifying the intonation (cf § 6.4.5.1-4 & G 13), moving from a conclusive sentence to an interrogative one, or else a suspensive or a continuative one. The reader should use recordings as always, and listening to the results with care, multiple times. It is necessary to pay attention to all the differences in pitch, while leaving aside other characteristics for the time being. In languages which differ from Italian because they have different vocalic timbres in stressed or unstressed syllables, it could be difficult to obtain suitable phrases and sentences. Thus the words could be changed in order that the same vowels are used instead of the original ones, as for instance in [aːˈvʌnlaː tʰaː karts əndwɔnˈdaːɡ], [iːvɪnˈtliː tʰɪɾi kʰɪts ɪndwɪnˈdɾɪʃ], [aːvʌn-
laː tʰaː kʰats əndwɔnˈdaːɡ] (I’ve only seen two cats and one dog), or it could be possible to simply hum each sentence.

In any case, using our intonation system (and perhaps sentences of our own language), we should be able to establish what our low(est) pitch is by considering the end of a conclusive tune, such as (though here examples are still from Italian – with the same vocoid) da Malaga ‘from Malaga’ [daˈmaːlaɡaː], as well as the high(est) pitch in da Malaga? ‘from Malaga?’ [ʔdaˈmaːlaɡaʔ], which will probably be on the last syllable, or the second or third to last, depending upon whether we have an interrogative tune of the rising type, as in neutral Italian and British English [ˈ···], or one of the rising-falling type, as in [ˈ···], [ˈ···] or [ˈ···], [ˈ···], [ˈ···], [ˈ···], &c (here we show the ideal four-syllable pattern). Then we should try to discover our mid pitch, by seeking a point between these approximate (and individual) extreme points.

Let us note that, in transcriptions of current texts, mid pitch stressed syllables, [\], might be indicated with [ç], as in tone languages, but it is not actually necessary: [ç ç ç], [ç ç ç], [ç ç ç], or [ç ç ç], &c.

It is very useful to add voluntary modifications, even if this makes the utterance more forced – the important point is to explore new things constantly. The experiments can involve single words, or even single syllables, with all the vowels, the same as before (but naturally, in the future, it will be necessary to move on to more natural words and sentences, with different kinds of vowels present at the same time).

12.20. For tones, as well, it would be good to draw tonograms (the figures with the three juxtaposed bands, as in fig 12.5-7), and to mark what is heard when listening to the recordings.

Another possibility is to mark a pitch beforehand, and then work at trying to reproduce that exact pitch perfectly, listening to the recording immediately afterwards. Syllables like la-la-la can be used [lːaː lːaː], and then the pitch can be modified while maintaining the stresses, giving, for example: [ç ç ç], [ç ç ç], [ç ç ç]; [ç ç ç], [ç ç ç], [ç ç ç], [ç ç ç], &c.

More syllables will be added: [ç ç ç], [ç ç ç], and gliding tones will be added as well: [ˈ···], [ˈ···], [ˈ···], [ˈ···], &c, including more complicated ones and compound
ones: [i], [j], [u], [y], [e], [ø] &c (better than the older—and fewer in number—analytical signs [.] , [Ɂ], [Ɉ], [ɇ], [Ʌ], [Ɇ] , cf fig 12.5, choosing between the tunings and the tones—if present—of the phono-syntheses of 16-23, or of HPr, and other books or pdf’s of ours.

It is also possible to use nonsense words, such as: [phæ’tʰɑːˈka'], [phɪi’thiikii], [phμu’thυukμu] (similar to the patterns [pɑ’tɑːka], [pɪi’ki], [pʊ’tuːku] we have used in the audio recordings of Phonetic Notation, given in the bibliography).

fig 12.4. Tonograms for exercises with tones.

It will also be useful to perform exercises on intonation, as well (cf fig 12.6), perhaps after having seen 13, also with [phæ’θʰɑː’ka’ pʰæ’θʰɑː’ka’], [phɪi’θhiikii prɪi’θhiikii-'], [pμu’θυukμu pμu’θυukμu], alternating between tunes like [. • . ], [. ‘ . ], [. . . ], and [. ’ . ], [. ’ . ], [. ’ . ], [. ’ . ], [. ’ . ], [. . . ], [. . . ], [. . . ], [. . . ], [. . . ], [. . . ], as a start.

And it would not be a bad idea to try protunes with various peculiarities, using [phæ’θʰɑː’ka’ præ’θʰɑː’ka’], [phɪi’θhiikii prɪi’θhiikii prɪi’θhiikii], [pμu’θυukμu pμu’θυukμu pμu’θυukμu], as in, for example: [. ’ . ’ . ] (or [. – . – . – ]), [. . . . . . ], [. ‘ . ’ . ’ . ’ . ], [. ‘ . . . . . ], [. . . . . . ], [. . . . . . ], &c.

As we have already said, having the same vowels and the same sequences makes it possible to concentrate on the pitch, without distractions and without having to worry about remembering a particular sentence. The voiceless C can be useful to segment these strings better, especially if using some computer acoustic programs (to help beginners or less gifted readers).

fig 12.5. Further tonograms for possible exercises.
Stress

12.21. In addition to the fundamental ideas seen in § 6.4.2-3, we add here that stress is the increase of muscular activity and air pressure in the lungs, larynx, and articulatory cavities, applied to one particular syllable. Therefore, on the part of the speaker, there is a greater general effort. That is to say, there is an increase in expiratory energy, in laryngeal tension, and in articulatory force, with respect to weaker syllables. In fact, even for syllables 'without stress', a certain amount of both physical and mental effort is necessary. Moreover, in order to be audible, even the weakest syllables have to have a certain length, pitch, and force, together with a certain (intrinsic) perceptibility, provided by the phones of which it is composed.

As is well-known, these four factors (ie timbre, force, pitch, and length) combine together differently, according to the different languages and the particular syllables in question, to produce a sufficient amount of prominence (cf § 13.1). This prominence is what matters in every language, whether the location of stress is distinctive or not. Those acoustic analyses which 'reveal' that one single element (out of intensity, frequency, and length) is responsible for accentual prominence, are definitely imperfect and lacking, as well as being misleading. In fact, they fail to balance and compensate for all the components, in their actual proportions, which can change depending on the intonation movements of sentences and on (phonetic—phone-emic) length. Instead, the human ear of a native speaker succeeds in all of these tasks, and often the ear of a foreign speaker can also perform well in these respects. Machines cannot compete with human capacities, because they are too limited and too selectively objective, and lack the indispensable quality of flexibility.

From a perceptual point of view, listeners normally manage to distinguish which syllables are stressed by putting together all the available elements of the utterance, in order to reconstruct and deduce the way in which they would themselves produce those elements to obtain analogous results. For practical purpose, we can speak of the process in simplified terms of force (production) and volume (perception). Therefore, once the prominence of a syllable has been established, excluding severe variations in pitch, length, and timbre (which are present, but occur in their normal, inevitable proportions), the relative differences with nearby syllables can be analyzed, in order to gradually modify the strength of the stress.

It is not rare to find people who cannot find the location of the stress in their own language, when vowel timbres have no significant differences between stressed and unstressed syllables. If they are asked to indicate which syllable is stressed in words like Italian cavallo, margherita, or even fare, farai, they may answer completely at random! They do not make mistakes, however, with farà, così! They are completely deaf concerning prominence (and also concerning the other things not shown in writing, in particular the timbres of e, o, s, z /ɛ, ə; ɔ; s; z; ɛs, ɛʃ/). There is, however, one way (which goes back at least to certain Latin grammarians and teachers) to learn which syllable is stressed. The person is asked to pronounce the words in question as if shouting them to someone quite far away. Immediately, or immediately after the first try, it will be enough to pretend to shout.

Quickly enough, anyone can learn in this way how to tell correctly which sylla-
ble is stressed: [ka’val:jlo, marge’rìta, fa’re, fa’ra; fa’ra, ko’zi]. In fact, in this way, the stressed phonetic syllable is notably lengthened, and it receives a generally high(er) prominence which is decidedly perceptible. This remains true even though the other syllables (particularly the last one) also gain in prominence—they still gain less prominence than the truly stressed one: [ka’val:jlo, marge’rìta; fa’ra].

Naturally, all this is true of one’s own language and, in this case, for an Italian native speaker. However, if this speaker, for example, pronounces ippodromo or gratuito as [i’ppo’drø:no, ‘gratu’iti:no], then this is the stress location that will come out of the exercise (in this case, it is a pattern which should be decidedly avoided [as the present author has indicated in the DİPI–Dictionary of Italian Pronunciation—marking these realizations with ‘i’]). For this reason, in order to get reliable answers, it is necessary to consult a good dictionary, or better still, a dictionary of pronunciation. This is true of native speakers as well, and therefore even more so of foreigners.

In this last case, the method just indicated for finding the stress in a word, will obviously not work. In fact, what would be determined, at most, is the position (correct or otherwise) that the foreigners attribute to the given word, according to their personal experiences and knowledge as non-natives.

12.22. In considering normal denotative utterances, it is important to pick out which syllables bear the sentence stress (ie ictus). These are syllables which have strong, or primary stress: [\$. Other syllables have less strong stress: mid, medium, or secondary: [\$, or weak (‘without stress’ and—rather—without a mark): [\$. This last corresponds to the neutral, unmarked, level of force for a syllable. The syllable remains, however, fully audible, even in cases when the nucleus is attenuated, as with [ə, ɛ], &c. It is also possible to have syllables with reduced stress, written [\$], that is, less than the normal weak stress; this is true particularly in rapid speech. On the other hand, there are also syllables with extra-strong stress, ["\$], which is emphatic.

The different languages can use (the position of) stress in a word as a distinctive element, in a more or less extensive way. From a phonemic point of view, it is appropriate to try to understand the unmarked structure of every language with free stress (ie, not automatically linked to a particular syllable, for phonological reasons, or reasons of syllable length).

For example: photograph [ˈfɔtəˈɡrɑːf], photography [fəˈθɒɡrɑːfɪ], photographic [ˈfɔtəˌɡræfɪk], (an) increase [ˈɪŋkriːs], (I) increase [ɪŋkriːs]; in Spanish: término [ˈteɾmɪno], termino [ˈtermɪno], terminó [ˈtermɪno]; in Italian: (io) capito [ˈkapɪto], (ho) capito [ˈkapɪtɔ], capitò [ˈkapɪtɔ], fotografò [fotografɔ], fotografano [fotografαno], fotografare [fotografare], fotografò [fotografɔ].

Distinctive (or phonemic) stress, as in some of the cases seen just now for English, Spanish, or Italian, could be called a stresseme, in opposition to mere stress (or instead, as will be seen very shortly, it would be possible to speak of the dyneme, in contrast to dyne, in order to use more careful and scientific terminology in this area as well).

At times, it is important to speak of destressed syllables, [\$], not just unstressed ones (ie [\$, but [\$] in phonemic formulae). This refers to syllables which are nor-
mally stressed, but which become unstressed, or with reduced stress, in a phrase or sentence. This typically occurs because the words in question are weak monosyllables, or weak elements of lexical compounds (or else to lexemes which are weak in sentence context, for pragmasemantic reasons).

Depending upon languages, the words are typically grammemes and lexemes of little prosodic and pragmalinguistic importance, which have normal primary stress when pronounced on their own, in isolation, or as original forms. Languages can behave differently, in terms of both prosodic and articulatory reduction.

In Italian, for example, in cases like è vero, tre volte, poiché, benché we have full reduction from a prosodic point of view, but only partial reduction in terms of the articulations; in fact, we have [ɛˈvɛrɔː, ˈtɾɐˈvɔlːte, pɔˈiːke, ˈbeŋke] (cf. § 3 of HPr). In Spanish, prosodic reduction of lexical monosyllables is less than in Italian (cf. § 6 of HPr), and the same is true of northern Italian dialects.

In Catalan (and in some other Romance languages, including many northern and southern Italian dialects), only a restricted set of phonemes generally occur in unstressed syllables of bisyllabic and polysyllabic words, due to the presence of extensive neutralization, even to /ə/.

Often, the vowel phonemes allowed are only /i, a, u, ə/ (Neapolitan), /i, a, u/ (Sicilian), or also /i, ə, u/ (neutral Catalan), or /ɔ, a/ (the Italian dialect of Bari, Apulia).

However, in these languages as well, destressed vowels are generally not a phenomenon having to do with phonic reductions of (isolated) words, but they rather follow the different phonic laws of the utterance (of the word in context and of connected speech), that is, of phone groups.

In fact, although descriptions commonly emphasize the idea that neutral Catalan has only three V in unstressed syllables, (/i, ə, u/ [i, x, u]), in sentence context (and in the first elements in lexical compounds), we naturally find /e, ɛ, a, ɔ, o/ [e, ɛ, a, ɔ, o], as well, as in these Catalan examples: és gros, com més, ha fet [eˈzɾɔs, kɔmˈmɛs, aˈfet].

12.23. fig 12.6 gives two diagrams (for two different types of scale) which could be useful for showing the peculiarities of stress in different languages, and thereby in making comparisons on general interlinguistic levels easier. In fact, the dynogram (or stressgram) makes it possible to observe the continuum of dynetic levels (that is, the force of stress, aside from simply functional dynemic peculiarities (of course, the word is derived from Greek δύναμις (dynamis) ‘power, force, strength’) to which the normal markings can refer: weak stress, [ ], secondary (or mid) stress, [ ], primary (or strong) stress, [ ], and emphatic (or extra-strong) stress, [ ].

In cases where intermediate gradations occur, they could be: half-mid stress, [ ] half-strong, [ ], and possibly, also half-extra-strong, [ ]. An extra syllabic nucleus (usually ephenthetic, with functions of support) can be called extra-weak. It can be generically marked with [ ] (the same symbol as for perceptible explosion of stops, or other contoids, since the two phenomena coincide in production), or with a superscript of the vocalic symbol, a more articulatorily appropriate method (as we have done in Hindi, HPr, § 10.3.1.4).

Observing fig 12.6, we perceive the four fundamental categories: [a, ɔ, ɪ, ə] (weak, mid, strong, and extra-strong), and the four supplementary ones: [ɪ, ɔ, ɪ, ə]
{a} (extra-weak, half-mid, half-strong, and half-extra-strong – added within [[]]). For each of these, the right half refers to the ‘normal’ position, with the cursor in the middle of it, while the left half is used for levels which are weaker than normal, should these occur. These supplementary intermediate gradations, {[a, a, 'a, "a]} could be useful for explaining particular cases, as we have, for example, done with certain compounds in English (HPr, § 2.3.4.2), German (HPr, § 5.3.3.2 & 5.3.3.5), Spanish (HPr, § 6.3.2.2), Portuguese (HPr, § 7.3.2.2), and Hindi (HPr, § 10.3.2.5). Of course, we might suggest more recent and more exhaustive books of ours, already published, or forthcoming. The extra gradations should also be understood as effective possibilities for oscillation.

In a systematic treatment of the pronunciation of a language, such as in a specific monograph, it is possible to show greater detail. Just as much more space would be given to intonation than in the chapters of HPr (where the intonation is given ‘embryonically’, but with all of its potential for applications), it would be possible and useful to present the dynogram (and the chronogram) in their respective sections (or together with the tonograms). Here, we give in fig 12.7 a comparison between English, Italian, Hindi, and Esperanto. Several peculiarities can be noted, including the extra-weak level in Hindi (indicated by the white cursor, used for very short vocoids serving only as support), and, in contrast to the others, the canonical regularity of Esperanto.

Stress (or word stress – mostly with English examples)

12.24. We know that (the position of) stress may be distinctive, in English: import (noun, adj.) [ɪmˈpɔːrt], import (verb) [ɪmˈpɔːrt]; present (noun, adj.) [ˈprɛzənt], present (verb) [ˈprezənt].

English sentences usually keep the stresses of their words well, even in mono-
syllabic lexemes (ie lexical monosyllables), while monosyllabic grammes (ie grammatical monosyllables) lack any stress (as, in general, do unstressed syllables in polysyllabic words): *Sam has bought three new small black cats* [sæm hæs bɔt θæri ˈnjɪrʊˈsmɔ:k ˈkæts]; but we have: and there was a large crowd of people [nəuwaˌzælədʒiː ˈkʌroʊ ˈrʊd ɒv ˈpiːpl], but it’s of the greatest importance [bɪt əv ˈdʒɛst ɪmˈpɔrtns].

However, in long words (and in sentences as well), many syllables with full vowels generally receive secondary stresses (especially when they occur near unstressed and reduced syllables): overestimate [əʊˈvɜːstɪˈmeɪt], visibility [vɪzəˈbilɪtɪ], perpendicularity [pɜːrˈpɜːnsəlɪtɪ], recognize [rɪˈzaŋkəz], *Mexico* [ˈmɛksɪkəʊ].

In compounds, the more frequent structure is ["] (more rarely ["]): overestimate [əˈvɜːstɪˈmeɪt], visibility [vɪzəˈbilɪtɪ], perpendicularity [pɜːrˈpɜːnsəlɪtɪ], recognize [rɪˈzaŋkəz], Mexico [ˈmɛksɪkəʊ].

Of course, there are also many instances like: *English teacher* ‘a teacher of English’ [ɪŋˈglɪʃ ˈtiːtʃə], and *English teacher* ‘a teacher who is English’ [ɪŋˈglɪʃ ˈtiːtʃə].

Let us now consider compounds such as *first class* (noun and adverb) and *first-class* (adjective), and the collocation *first class* in a sentence like *that was the first class to be considered*. From a phonetic point of view, they are alike: [fɜːs(k) ˈklɑːs]; however, from a phonemic point of view, and for teaching and lexicographical purposes as well, it could be very useful to distinguish them as: /fɜːsˈklɑːs/ (compounds: ‘/$$$/’) and /fɜːsˈklæs/ (collocation: ‘/$$ $’‘).”

Besides, patterns are flexibly structured. As a matter of fact, we have: *fifteen* [ˈfɪfθɪn] and *page fifteen* [ˈpeɪfθɪn], but *fifteen pages* [ˈfɪftɪn ˈpeɪfθɪz]; *brandnew* [brendˈnjuː], but a *brandnew computer* [breндˈnjuː kəmˈpjuːtə].

Moreover: *secondhand* [ˈsɛkənθæn], but *secondhand clothes* [ˈsɛkənθænkləθz]; and they’re all *secondhand* [ˈsɛkənθæn]; also *afternoon* [əˈfɜːrˈnoʊn] and *good afternoon* [ɡʊd əˈfɜːrˈnoʊn], *afternoon tea* [ɑːˈfɜːrˈnoʊn ˈteə].

It is worthwhile observing nuances carefully: *demonstration exercises* [ˌdɛmənˈstræʃən ˈeksəˈzɛriz], *demonstrator* [ˌdɛmənˈstrætər], *elevator operator* [ˌeləˈvɛrəˈɑːprəˈɔptər], *light housekeeper* [ˈlaɪt həʊskɪˈpiː], *laɪt həʊskɪˈpiː], *laɪt həʊskɪˈpiː]; let us notice and compare: *light housekeeper* [ˈlaɪt həʊskɪˈpiː].

12.25. To feel certain about the stress patterns of compounds, it is necessary to look them up in reliable dictionaries. But pronunciation dictionaries are not always the best choice, for this aspect, although, of course, they have to be consulted. We willingly recommend the Random House dictionaries which, for secondary stress, are almost perfect; of course, the stress patterns shown are American (and, practically, International) ones, but, in general, they may hold good even for British English, which, in the meanwhile, may have added %% kept some oth-
er possible variants (mainly collocation-like, rather than compound-like, so less useful ones: weekend, icecream, New York, New Zealand, New Hampshire...).

In addition, the Oxford ‘Advanced Learner’s’ dictionaries show the ‘marked’ cases of primary stress in several lexical collocations (which are quite unpredictable, syntactically, above all for foreigners).

In (dia)phonemic transcriptions such as ours, the most typical and numerous compounds are shown with a single primary stress /$$/; the secondary one is easily recoverable, because the second lexeme necessarily bears a secondary stress.

Vice versa, most dictionaries printed in the USA include secondary stress, ‘/$$/‘; but usually the non-IPA symbols they use put stresses after stressed syllables, unfortunately, not before, and simply through a difference in thickness (which, sometimes, is not evident enough, even with both of them in *presentia*). As a matter of fact, we happen to find, eg ‘in scrib’” for our inscribe [ɪnskraɪb] and ‘viz’o bil’a tè’ for *visibility* [ˈvɪzɪbɪlɪtɪ]. But some American dictionaries are misleading, because they mark secondary stress for most unstressed syllables bearing full (unreduced) vowels.

Regrettably, mainly dictionaries published in the UK (even pronouncing dictionaries) do not use secondary stress wisely enough. As a matter of fact, a collocation like central heating [ˈsɛntəl hɪtɪŋ] is, usually, represented as */sentrəl hɪtɪŋ/, exactly like centralistic */sentrəlistɪk/, which, of course, is */sɛntəlistɪk/.

However, the more they mark the better, even when things are predictable, provided they do so in an exact and accurate way. Indeed, didactic transcriptions (especially for beginners) should show several characteristics, with no absurd and groundless fear that they may confuse. In reality, too simple a transcription is less useful and, sometimes, misleading, too.

As regards diaphonemic transcriptions in compounds with suffixes, it is sufficient to know which of them are always *non(half)stressable* (‘/$$/‘) and which are prosodically *half(stress)able* (‘/$$/‘). As a matter of fact, the others, that have full vowels, are always *half(stress)able* (‘/$$/‘). In addition to those with /a, ɪ/, the following are always unstressed: -ic˚, -ics˚, -ing˚, -ish˚, -ist˚, -ive˚, -phil˚ (-fk, -faks, -fæɪ, -fø, -fɪl) – rhetoric˚, politics˚, lingering˚, yellowish˚, novelist˚, descriptive˚, anglophil˚ (-føk, -føks, -fæl, -fæs, -fø, -fɪl) – friendship˚, anglophile˚, we have [-faɪt, -fte].

Instead, the following are *half-stressed* (if preceded by an unstressed syllable), but *unstressed* (if preceded by a stressed syllable): -hood˚, -ism˚, -ite˚, -ize (ise)˚, -ship˚, -ule˚ [-hʊd, -ɪzм, -aɪt, -aɪz, -ʃɪp, -juːl] – womanhood˚ [-wʊmnhʊd] (≠ childhood˚ [-tʃaʊldhʊd]), terrorism˚ [-tɛrəzɪm] (≠ Buddhism˚ [-bʊdɪzм, -bju-]), Trotskyite˚ [-trɔkˈsaɪt] (≠ sulfite˚ [-sʌltɪ],) criticise˚ [-kriˈsaɪt] (but baptize˚ [-ˈbæptɪz], in addition to [-ˈbæptɪz],) scholarship˚ [-ˈskɔləʃɪp] (≠ friendship˚ [-ˈfrendɪʃɪp], molecule˚ [-ˈməʊkli] (≠ globule˚ [-ˈɡlɒbl]).

**Sentence stress (mostly with English examples)**

12.2.6. It is advisable to consider as *sentence stress* (or *ictus*), every case of word stress which remains stressed in sentence context, and does not become reduced.
Generally, English does not reduce its ictuses; as a matter of fact, we can easily have examples such as the following (please, note that in phonotonemic transcriptions, the symbols /; ; / indicate intonation, not just a separation of example words, together with /?/ and /¿ /¿/, which are less ambiguous at first): *Then three nice black cats ran out* [ðæn; 'ði3 i' naʊs b'læk 'kaʊts; 'ræn 'aʊt.]

It is preferable to avoid using the term ‘sentence stress’ to refer to the sentence *focus*; this last notion refers to the word, or words (and therefore concepts), which in a given utterance are communicatively more *prominent*; in fact, they are highlighted by virtue of being *new* to the conversation (as opposed to being already given, or known).

Sentence stress and focus are in fact two distinct attributes, although they are not necessarily incompatible. In fact, they can both be present in the last stress group, even though this possibility is statistically the least frequent: *I never said that was true* [æz ðne v-æ'd- ðæp wuʒ[tɪmu], æə, æə].

In practice, it is much more probable for the sentences above to be uttered as follows (although we leave with readers the task of making their own phonotonemic transcriptions): *I never said that was true* [æz ðne v-æ'd- ðæp wuʒ[tɪmu], or [æz ðne v-æ'd- ðæp wuʒ[tɪmu], or better [æz ðne v-æ'd- ðæp wuʒ[tɪmu].

Therefore, a concrete utterance (which is sufficiently long) will have multiple *ictuses* – ie *protonic* syllables and one or more *tonic* syllables (in the rigorous sense of *stressed* syllables, respectively, in the *protune* or in the *tune*).

At the same time, the utterance can even have one or more points which are communicatively *highlighted* (ie the *sentence foci* [fəʊsəʊə, -kaʊə, -kai]), and these are generally expressed by different proportions of stress and pitch.

The sentence *These are the new co-workers of my neighbor Roberta* (British spelling -our) can be variously realized, with single or multiple highlights. We can therefore encounter: *These are the new co-workers of my neighbor Roberta* [ðɪzæd ðˈʃər nɪməs ˈkʰəʊɑwɑkɪz əʊməˈniːbə ˈʃəʊətə,], or also [ðɪzæd ðˈʃər nɪmə ˈkʰəʊɑwɑkɪz əʊməˈniːbə ˈʃəʊətə,], or else also [ðɪzæd ðˈʃər nɪmə ˈkʰəʊɑwɑkɪz əʊməˈniːbə ˈʃəʊətə,].

In any case, the elements highlighted can be grammemes, as well, in case of particular contrasts. With the examples above, we can have: [ðɪz- øəˈniːmə ˈkʰəʊɑwɑkɪz əʊməˈniːbə ˈʃəʊətə,], or [ðɪz- øəˈniːmə ˈkʰəʊɑwɑkɪz əʊməˈniːbə ˈʃəʊətə,] (with *are* highlighted), or even [ðɪzæd ˈʃər nɪmə ˈkʰəʊɑwɑkɪz əʊməˈniːbə ˈʃəʊətə,] (with *new* destressed, but with *my* highlighted, for some particular reason). Some kind of attenuation can occur in parts of the sentence rendered ‘parenthetical’, as in the following example, which is spoken as a sort of afterthought: *of my neighbor Roberta* [əʊməˈniːbə ˈʃəʊətə,].

12.27. In *idiomatic use*, we find that given word sequences, which can also occur in their literal sense, present outwardly ‘strange’ (or *marked*) stressing. In fact, grammemes, or qualifiers, are brought out instead of the lexemes that accompany them, because these last are destressed (here shown by means of //, which becomes distinctive).

More often, we find the sequence grammeme + *attenuated lexeme*, as in: *for one thing* [fuˈwen; ðəŋ], *on the other hand* [ɒndiˈved-əhænd], *by no means* [bæzˈnu-
Some other times, instead, we find attenuated lexeme + accentuated grammeme, as in:

\[ \text{I know what, that's about it, fancy that!} \]

Thus, idiomatic stressing gives a particular meaning, to certain lexical collocations, which is not literally predictable.

On the contrary, in the literal sense, their stress is the ‘normal’ one, which is predictable from the syntactic order of their words, each one bearing its usual meaning, as for:

\[ \text{in that event, by all means, on the other hand, that's about it.} \]
13. Macrostructures  
(mostly intonation)

Prominence

13.1. The degree in which a syllable stands out among adjoining syllables in an utterance is defined prominence, as already mentioned. It is the result of different combinations—depending on languages and speakers—of four fundamental elements: the timbre of the phones, which form a syllable (i.e., their relative intrinsic perceptibility, determined by articulatory characteristics), stress, or strength of realization, relative pitch, and length (or duration). For practical purposes, it is better to analyze the four elements separately (cf. §12).

Rhythm & rhythm groups

13.2. Every language has its own particular rhythm, deriving from the structures of its syllables and rhythm groups. Rhythm is the result of regular occurrences of prominent syllables in the speech chain. Generally, the alternation of stressed and unstressed syllables is fundamental. In many languages, stressed syllables may also be long(er) or be on a marked pitch—high or low (i.e., different from the mid—unmarked—value).

To all this, some languages may also add a considerable reduction in the duration for timbre of the phones of unstressed syllables (indeed some of these phones, often, drop completely, as happens in English, for instance). In quite a large number of languages, duration for pitch do not depend on stress; consequently, they may contribute to increase or diminish the prominence of both stressed and unstressed syllables. These characteristics are chronemic (i.e., short phones functionally opposed to long ones, being phonemes) and tonemic (i.e., syllables with different—functional—tones, i.e., tonemes).

13.3. Rhythm groups (or stress groups) are formed by—at least—one syllable with strong stress. Usually, a stressed syllable is accompanied by other syllables, with secondary (or mid), weak, or reduced (or weakened) stresses. Furthermore, they show considerable internal cohesion, not only on the phonetic and prosodic level, but also on the semantic one; which means that they have a precise global meaning.

The rhythm groups of certain languages may have only few weak syllables, alternated with mid ones. Other languages, instead, may have quite long sequences of weak or weakened (or reduced) syllables (with shortened phones and attenuated timbres).

English and the Apulian dialect of Bari and Foggia (and others in higher-south-
ern Italy) belong to the latter group of languages; on the contrary, the following belong to the former: Italian, Spanish, French, Brazilian Portuguese, Polish, Czech, Hungarian, Swahili, Hausa, Japanese, Vietnamese. Other languages have intermediate positions: more or less near one group or the other. For instance: German, (Lusitanian) European Portuguese, Russian, Arabic, Hindi, and Chinese are among them.

Here are some examples: And there was a large crowd of people waiting for them: [ɐdənwɔʃ ənɔs kʰaɾaʊ ʃɨɾɪɾ]; I'm gonna take all of them to the performances: [æmɡaɾəŋ ˈheɪk ˈɡəldɪm]; ʃədəɾəfoˈmɛnsɪ]. English examples will be given only in neutral British pronunciation, to make comparisons easier and simpler.

On the other hand, let us consider these Italian examples (which are a translation of the English ones): E c'era una gran quantità di gente ad aspettarli [ɛtʃɛraunaˈgran kwantitad diˈdʒentetad ədasperˈtarell]; Li porterò tutti quanti agli spettacoli [liˌpoɾteˈro tuttikwanˈti; aˌlispetaˈkoli].

**Pauses**

13.4. A pause is a momentary break in speech, which takes place for various reasons: physiological (i.e. breathing), semantic (i.e. meaning), logical (i.e. connection), psychological (i.e. attitudes), and pragmatic (i.e. communicative strategies). It is convenient to measure pauses in reference to the number of syllables which could fill the time of their duration, resulting from an average of both stressed and unstressed syllables. Therefore, we speak of short, mid, and long pauses, of about 3, 6, and 9 syllables respectively, or rather of about 2-4, 5-7, 8-10 mean phonoseyllables: [ ], [ ], [ ]

If a short pause is not certain, or may be missing, it is indicated by [:] and is better defined as a potential pause. Sometimes, above all for psycholinguistic or behavioral purposes, it may be necessary to indicate pauses in a more precise way: in hundredths of a second; especially when they differ from expected ‘normal’ ones.

Usually, in pause groups (i.e. what is included between two pauses), normal speech uses two or more rhythm groups, which are linked to convey a fuller sense.

Sometimes, a pause group coincides with one rhythm group; at other times, combinations of rhythm groups in different pause groups change the meaning of similar utterances, often much more than the presence or absence of tunes within the utterance itself, as in: You may go now [jʊˈmeɪ tʃɜː oˌnəʊ], quite different from You may: go now [jʊˈmeɪ tʃɜː oˌnɪ tʃɜː oˌnəʊ], again different from You may. Go, now [jʊˈmeɪ tʃɜː oˌnɪ tʃɜː oˌnɪ tʃɜː oˌnəʊ].

**Pitch & tunings (or intonation groups)**

13.5. Fig 13.1 schematically shows the relationship between the three fundamental types of voices: male (m), female (f) and infant (i); the grey band helps to realize that the same absolute pitch corresponds to quite different relative pitch levels. Of course, among the three groups (already introduced in 12.17 & § 12.20)
there is a fairly gradual transition, since—for each one—we can easily find more or less high/low voices, in addition to those representing the average of each group.

When two or more pause groups are linked together, their meanings are co-ordinated as well; therefore, they are combined into something wider and more coherent, thanks to a particular intonation contour. Thus we get tunings, which may even coincide with one rhythm group, or one word, possibly formed by one syllable, again: Yes? or Here.

**Paragraph & text**

13.6. When one or more speakers continue on the same subject, with semantic cohesion, a sequence of tunings is technically called a paragraph. From a prosodic point of view, a paragraph is usually characterized by given rhythm and intonation features, which determine their internal cohesion, in contrast to other paragraphs, within the same text.

Generally, a paragraph ends with a greater pitch lowering (compared to normal pitch), which is marked with [.] at the end. Likewise, a paragraph may begin at a slightly higher pitch, marked by [•] at the beginning. This guarantees internal unity and coherence, in contrast with other paragraphs.

A simple kind of paragraph is constituted by sayings: *When the cat’s away, the mice will play* [“wen ðəˈkæthes ʌˌwɛɪ, ðə ˈmeɪz ˈphlɛɪ”].

A text may be constituted by a speech, a lesson, a (university or public) lecture, a news bulletin, a sermon, a soliloquy, a joke, &c. A paragraph may be constituted by the sentences of different speakers, when the text (presenting semantic and pragmatic cohesion) is a conversation, a phone call, an oral examination, an interview, a quarrel, &c.

The text is not necessarily long: even *Here? – Yes* may be a text, supposing that the two speakers share certain presuppositions.

**Rate**

13.7. Languages (and speakers) have different rates of uttering. Rate can be measured in words per minute (100-200 on average), in phono-syllables per second (2-5), or in phones per second (6-20).

In general the number of words and syllables varies according to their structures and extensions; the number of phones varies according to their (phonetic and phonemic) duration.
Moreover, rate varies according to particular semantic, social, and pragmatic factors. *Conversation* itself can be classified in at least three different types: *slow*, *normal*, and *quick*. Consequently, the numbers given above tend to move towards the limits indicated, or even to slightly exceed them.

Pause incidence is connected with rate, too. Indeed, there is a limit beyond which phones cannot be shortened or lengthened without becoming incomprehensible, or ridiculously intolerable. Therefore, the quicker/slower the rate is, the more the duration and number of pauses will be reduced/increased.

In a *normal conversation*, pauses take almost *a quarter* of the total duration of a text. But the time taken by pauses can be longer: up to *half* of the total duration. There are cases (or particular moments) where pauses can even take three quarters of the total time (without falling into pathology); but such cases fall within the aims of paraphonic analysis.

**Intonation**

13.8. **Intonation** (as can already be inferred from § 6.4.5.1-4) is constituted by the relative pitch of syllables forming more or less long sequences of connected speech.

These sequences are called *tunings* and can consist of pause groups (which, in turn, consist of rhythm groups); but they can also consist in a single word – which can even be monosyllabic: *No. – No? – No! – No...*

What is essential is that pitch –through given differences– adds (or, rather, gives) different pragmasemantic nuances –such as ‘statement, question, command’, &c– to phonic sequences which could otherwise be identical.

Thus the difference obtained is not merely semantic, conceptual, as in the case of ton(em)e languages, such as Chinese. However, by using the same principles and the same symbols of syllabic-tone notation, we can accurately (and without too many problems) transcribe the characteristics of pitch and strength of the syllables of a whole utterance. In fact, stress-tonal signs show both the relative pitch and stress-degrees of the syllables before which they are put.

First, let us see (fig 13.2.1) an iconic and simple way to introduce people to intonation.

---

**fig 13.2.1. ‘Icono-tono-graphic’ examples for intonation.**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>See you on <em>Saturday</em>.</td>
</tr>
<tr>
<td>2</td>
<td><em>(Will they)</em> see you on <em>Saturday</em>?</td>
</tr>
<tr>
<td>3</td>
<td><em>(If they don’t)</em> see you on <em>Saturday</em>... <em>(it’ll be a total disaster.)</em></td>
</tr>
<tr>
<td>4</td>
<td><em>(If they don’t)</em> see you on <em>Saturday</em>... <em>(don’t worry about it.)</em></td>
</tr>
</tbody>
</table>
nation: by carefully reading the examples given, and following the heights shown for every grapheme.

Now, we can go to fig 13.2.2, where we can see the whole pitch extension of an utterance, which is called a tuning (or intonation group, cf fig 13.5-6, § 13.11 & fig 6.21). It is divided into a protune and a tune. Here we anticipate that a general tune consists of three parts: a pretonic syllable, the tonic (ie the stressed) one, and (two) posttonic syllables.

A protune consists of one or more stressed and unstressed syllables (which are called ‘protonic’ and ‘intertonic’ syllables, respectively).

Sometimes, it could be important to refer explicitly to the first or last ‘protonic’ syllable, in the description of certain languages with particular protunes. Usually, the first protonic can be preceded by some ‘antetonic’ (ie initial unstressed) syllables.

13.9. In anticipation of what will be dealt with presently (from § 13.11 onwards), we may say that there is a ‘normal’ protune, for statements, which has no particular symbol since it is the unmarked one: \[
/ / .
\]

There are, then, three marked protunes: interrogative (\[\] ), imperative (\[\] ), and emphatic (\[\] ). These symbols are put at the beginning of an utterance, but not in the poor syntactical meaning of a ‘school sentence’.

For the French language, it is necessary to add a fifth protune, for partial questions (\[\] , which contain an interrogative word), instead of the normal one (\[\] ), as can be seen in HPr (in fig 4.3; see § 4.3.5 as well). It is true, though, that at a greater level of formalization we could avoid introducing this peculiar (notational and categorial) innovation, by using extraphonic information and recognizing interrogative lexical elements (such as qui, quand, combien, comment, pourquoi, où) as belonging to a particular group.

Nevertheless, from a descriptive and contrastive point of view, more practical (and less theoretical) structures seem to be preferred; thus it is sufficient to find \[\] to realize we are dealing with partial questions and not with total questions (\[\] ).

We must make it clear at once that written sentences are one thing, while the spoken language is quite another reality, often very different indeed. Naturally, in
the spoken language, tunes are much more numerous than ‘simple sentences’ of grammar and syntax, as will be seen below. Indeed, plain and linear syntactic sentences, from a true linguistic point of view (ie actually spoken sentences in real and spontaneous speech, even if uttered by professional actors), very rarely coincide with phonic sentences. As a matter of fact, almost any syntactic sentence is made up of at least two or three phonic sentences, or better tunings.

But let us consider tunes. Generally they are formed by the tonic syllable (ie the stressed one, which is also the last strong syllable in an utterance, in a sense), the pretonic (ie the possible unstressed syllable before it), and the post-tonic syllables (ie the possible unstressed syllables after it). In the tonetic diagrams (or rather tonograms), two post-tonic syllables are indicated (ie internal and terminal); sometimes it is useful to refer to one of them, clearly, in order to highlight typical movements more clearly, above all to distinguish interrogative tunes of the rising type (\ ([ \cdot \cdot \cdot ] \)), from those of the falling type (\ ([ \cdot \cdot \cdot ] \)). In any case, the term post-tune may be used to refer to both syllables, collectively.

We will now consider, concisely (and by looking closely at fig 13.4), the three marked tunes (of neutral British English): conclusive (\ (? \)), interrogative (\ (? \)), suspensive (\ (\cdot \cdot \cdot \)), and the unmarked: continuative (\ (? \)) – On Saturday [\ ([ \cdot \cdot \cdot ] \), -\ ([ \cdot \cdot \cdot ] \)], On Saturday? [\ ([ \cdot \cdot \cdot ] \), -\ ([ \cdot \cdot \cdot ] \)], (If not) on Saturday… (then…) [\ ([ \cdot \cdot \cdot ] \), -\ ([ \cdot \cdot \cdot ] \)], (Perhaps) on Saturday, (but…) [\ ([ \cdot \cdot \cdot ] \), -\ ([ \cdot \cdot \cdot ] \)].

13.10. The best way of dealing with the intonation of a language consists in presenting its structures through appropriate and clear diagrams (ie tonograms), with clear examples and a simple and sufficiently complete notational system (not cumbersome and useless).

First of all, we must repeat that the use and choice of intonation patterns do not depend on syntax at all, but on semantics and pragmatics, and above all on communicative goals. In fact, even if the syntactic formulation is, in the end, the most evident linguistic rendering (for those who are used to reading and writing), in actual fact, it is nothing but a faithful representation of the pragma-semantic way to express concepts and thoughts, peculiar to every language.

If, for instance, we write —and beforehand say— I’ve been looking for this for ages [\ ([ \cdot \cdot \cdot ] \), -\ ([ \cdot \cdot \cdot ] \)], the superficial formulation at hand is only the inevitable result of the mental and linguistic processes that produce, in English, the sentence just seen, although with slight possible variations.

In actual fact, it results from the juxtaposition of different concepts (each one indicated by /\), or ([ \cdot \cdot \cdot ])) in a single syntactic string, seemingly simple and straightforward, but actually very complex, as is obvious from its prosodic structure, if supported by an appropriate intonation pattern, as indicated by the small but precious signs used.

Let us now examine the intonation structure of neutral British English. However, we must first consider a general scheme, which will enable us to really see its characteristics. Thus fig 13.2 gives the diagram of tunings. It shows the use we make —when speaking normally— of pitch heights of the various syllables forming the different possible utterances in a given language.
In order to make experiments on the pitch of different syllables, it is certainly better to use identical vowel phones, to avoid being mistaken by articulatory timbres, possibly interpreted as differences in pitch. This is easier in languages like Italian, where examples like Rimini, concorrono, Anna assaggiava quaranta ananas [rimini, konkor:nno, 'anna as assaulted qua:rant*a 'ananas] are not difficult to find (despite their meanings, ‘the name of an Italian town, they are in competition, Ann tasted 40 pineapples’). As already said, these identical vowels help not to be biased, or misled, by different timbres; since front V seem to have a higher pitch, compared to back ones, which give the opposite impression.

**Tunings (or intonation groups)**

13.11. Tunings consist (as already seen, cf § 13.8-9 & fig 13.2.2) of a protune (in our example I am transcribing the following example [a:sm'tæn*skæ:bju3 dæføl-øøj ʊz'æmmp]) and a tune (phonetically [føneitik-li,..,]). In this case, we have a normal protune and a conclusive tune. The latter is represented, tonemically (in an abstract, more theoretical, way) by /../, and tonetically (in a more realistic way) by /'../.

The number of syllables in the example has been calculated on purpose in order to have full correspondence between the tonogram and the syllables of the sentence, to be able to show the characteristics more clearly.

Of course, in normal speech, it is unlikely to find sentences with the same number of syllables; however, the usefulness of the diagram is not compromised, since the actual syllables available (whether more or less than 14) share pitch heights in a fair way. So they may either compress the movement of several syllables into only one or two, or expand it over a larger number of syllables: Yes, we do or Our aim is to pass on ideas, techniques, and practical activities, which we know work in the classroom (even if this last example, more realistically, will be divided into more parts, with the addition of the respective tunes, mostly continuative), thus: Our aim is to pass on ideas, techniques, and practical activities, which we know work in the classroom. In a phono-tonetic transcription, we have: [ɑTs'æm Tz[æphæs'αn, a-zA'fæz: ɪkniiks∷æm phæktik] ækti:nætiz, wɪ'twɪn sandul'kw, ɪndul'kw].

**Protunes**

13.12. fig 13.3 shows the four protunes (of neutral British English): one is unmarked, or normal, and has no symbol; three are marked: interrogative /¿/ [¿], imperative /¡/ [¡] (for instance: Pay attention! [phæt ɪnætiz..,], and emphatic /˚/ [˚] (We have to check everything very carefully! [wɪ'thæt fæntæk, ɪ'n-ɪ.tjʊn, ɪ'vet-i 'kheæt[i,..,].

fig 13.3 shows, on the left, sketchy tonograms; on the right, they are given in a more realistic way. Actually, the schematic diagrams are sufficient indeed, since these tonograms necessarily generalize and normalize the data, allowing slight differences of realization, as well.

On the contrary, for teaching and learning purposes, these schematic tonograms are decidedly more useful, making comparisons with those of other languages possible.
Tunes

13.13. Fig 13.4 shows the three marked tunes (of neutral British pronunciation, again both schematically and realistically) – *conclusive* */· [···]*, *interrogative* */¿ [¿]*, and *suspensive* */¡ [¡]* – in addition to the unmarked one, *continuative* */ [, ,]*.

The marked tunes have a functional charge, which is crucial for communication, as they oppose one another distinctively. The unmarked tune – the continuative one – may be considered as the neutralization of the three marked ones (since each of them would be inappropriate in certain – less important – contexts, being too specific and having very definite functions).

The aim of the continuative tune is, above all, to oppose a theoretical ‘zero’ tune. It is quite different from a straightforward and progressive flow of enunciation, without the slightest variations (or breaks), even theoretical or potential. Its only purpose is to slightly highlight a word, compared to a complete non-occurrence of tunes (as happens within a protune).

Indeed, there is a difference between *I saw six men* [aʊ看清sə 'skɛks 'mɛn:] and *I saw six men* [aʊ看清sə 'skɛks 'mɛn:]; in the latter, of course, *six* is more prominent than in the former, since it has its own tune, instead of being a part of the same protune.

At the end of §13.11, we have seen that a syntactic string does not generally correspond to just one tune; in fact, more or less numerous continuative tunes occur, otherwise the sentence would not sound spontaneous and convincing. At first, one does not fully realize this internal subdivision, which is completely natural. Its appropriate use goes entirely unnoticed; whereas, its absence would not pass unnoticed at all (as happens in unprofessional reading or recitation).

For instance, if we consider an utterance such as *Look! the prints of a bear*, we realize that it can be said in many ways – apart from actual and paraphonic considerations such as the fright taken at the sight, or the delight expressed by naturalists, or the satisfaction felt by hideous poachers… (all of them are rendered with different nuances, clear and easy to interpret). Of course, this is different from a unitary sentence such as *Look at the prints of a bear*, in just one tuning: [*'lʊkət ðɔ- phɪnts əʊvəbɛə*].
13.14. Thus, if we go back to the original utterance, what we find is something closer to a natural exposition: [ lok, đəɾʰɛn̩ts əɾəβɛɾə ]; in fact, in the same sentence, there are two pragmatic concepts: the prints and its sighting.

If we then divide it into three parts (of course, with three tunes), the nuances expressed are more detailed: [ lok, đəɾʰɛn̩ts, əɾəβɛɾə ]; in this way, we can manage to separate, conceptually too, prints of different shapes.

After all, it is possible to use some continuative tunes (ie unmarked /÷/ as already seen in the previous section), and this will add something to elocution (in opposition to a unitary utterance, although this is not for emphasis, of course). It is only a way to make enunciation a little more effective and natural: [ lokʊt- đǐɾmpɅnɪnts- əɾəβɛɾə ] (and variations).

By considering an example like You must read further books on this particular subject, again, we can easily see that there are several ways of saying it. Apart from a quite flat realization in a single tuning, as: [ jɛməs-ɹɪɾɪf ʃz-də boks ɒnɪɾʊpɒɾɪk- jələ ʃɪbdɪkɪt̩ ], we can have: [ jɛməs-ɹɪɾɪf ʃz-də boks- ɒnɪɾʊpɒɾɪk-jələ ʃɪbdɪkɪt̩ ], or: [ jɛməs-ɹɪɾɪf ʃz-də boks- ɒnɪɾʊpɒɾɪk-jələ ʃɪbdɪkɪt̩ ], or else: [ jɛməs-ɹɪɾɪf ʃz-də boks- ɒnɪɾʊpɒɾɪk-jələ- ʃɪbdɪkɪt̩ ]. We could also have: [ jɪmɪ- ], or even [ jɪmɪ- məs-ɹɪɾɪf ʃz-də boks- ɒnɪɾʊs-ɾɪhɪk-jələ- ʃɪbdɪkɪt̩ ] (with more and more numerous nuances and implications).

fig 13.4. Tunes of neutral British English.

13.15. A conclusive tune is necessarily used whenever a given concept is completed in the speaker’s mind. Thus, besides the words which form the sentences, it concerns communicative functions as well, as if, in saying It’s raining cats and dogs, we added ‘I am stating’ – so: It’s raining cats and dogs [ Its ʔɛɪniɾ ʃhæts əndɾɒɾɡz ].

Each tune has a specific function: the interrogative communicates ‘I am asking’: Is it raining cats and dogs? [ ʔɪʃɪɾɪp ʔɛɪniɾ ʃhæts əndɾɒɾɡz ]; the suspensive one communicates ‘I am underlining’: If it’s raining cats and dogs… (it’s a calamity!) [ ɪʃɪɾɪp ʔɛɪniɾ ʃhæts əndɾɒɾɡz ] ( ɪʃɪɾɪp ʊɜɾɪm-əɾɪ ), The continuative tune, instead, simply communicates ‘I have not finished’: It’s raining cats and dogs (but I don’t care) [ Its ʔɛɪniɾ ʃhæts əndɾɒɾɡz ] ( bɒɾɛɹdɜɾɒɾkɪh əɾə ).

It is possible to have a series of conclusive tunes: Yesterday it rained. Today it’s raining. Tomorrow it’ll pour. I’m sick and tired. I’ll go away! [ ŋɛʔɛrɪŋ ɪɾɾɪpɪŋ ] ŋɛˈfɛt
A suspensive tune is very likely for *Tomorrow it'll pour*.

Too often, current writing (which is not at all sophisticated) uses only commas:

*Yesterday it rained, today it is raining, tomorrow it'll pour, I am sick and tired, I'll go away.*

Thus, with the guilty complicity of schools, one is led to a kind of ‘child-like’ reading, which makes people utter things like: *Yesterday it rained, today it is raining, tomorrow it'll pour, I am sick and tired, I'll go away.*

The small rings show the additional pitch movement which is typical of ‘bookish intonation’, which must be kept well apart from normal (ie conversational) intonation, and also from the typical intonation of text exposition (even done mentally), as we will see in § 13.27.

A further example to show that, normally, writing and punctuation are just miserable devices with syntactical functions, and not at all helpful for reading: *I'm terribly busy: I can't come; I'll let you know; don't be cross.*

Contrary to what grammars keep on repeating, a *comma* does not necessarily indicate a short pause, as a *semicolon* does not indicate a pause which is half-way between the ‘short’ one of commas and the ‘long’ one of *full stops* (as it is absurdly ‘prescribed’). However, these are the results achieved by schools, ie sadly rigorous and monotonous pauses, which are not able to convey appropriate meaning to sentences (especially when they are read).

And all those who today abuse punctuation, by omitting it almost completely, will they ever pause?

**Questions**

13.16. A further important point, to always keep in mind, is that an interrogative tune need *not* be used whenever there is a question mark at the end of a sentence! Unfortunately, this is another real mistake taught in schools.

It is important to clearly distinguish the different kinds of questions. Among the more recurrent and normal types, only *total questions* (or ‘yes–no questions’) request interrogative tunes. These questions are answered by *Yes* or *No* (or, possibly, by *Perhaps*, *I don’t know, It depends, &c); but, above all, they do not include interrogative words: *Did you see? [¿diɡstir], Is it interesting? [¿ziptζpζ], Can you hear me? [¿kunjamami], ¿kunjmu.*

It is important to pay due attention to cases where there is a ‘given’ element (book, music, John, here, hereabouts [in the following examples]), which is less important and thus less stressed, being already ‘known’, since previously mentioned, or ‘expected’, as present in a particular communicative situation, since it can be visible, or implied, or inevitable, from social or cultural experience.

*Have you read this book? [¿hævjaɛd: iðisbok], Do you like music? [¿qiowlaek iðmuζ], Do you know where John is? [¿qiownζ, ¿weζζ], Is the station far away from here? [¿zdζtei faζ iziuz], Is there a library near here? [¿zdζlayki izniu].*
13.17. In the examples just seen, the structure is /¿/?+/¿, with attenuation of the sentence-internal interrogative tune. Thus, strictly speaking: /¿/?+/¿, as will be seen shortly, with modifications of the tunes (§ 13.21-3).

Indeed, internal attenuation is automatic, so it need not be explicitly marked: [¿·]+[¿ ·], for [[¿·]+[¿ ·]]. In fact, that utterance is formed by two tunes, not just one; and this is significant to show the difference between written and spoken codings. The former is too sketchy, due to its excessively limited graphic possibilities, but it should not in the least restrict the varied phonic possibilities, which are typical of spontaneous and qualified speech.

This is the reason why punctuation should be more careful and accurate, still without introducing new—though desirable—signs, as for instance ‘.’ (no longer as an ‘epigraphic dot’, but as an ‘orthological [raised] dot’, followed by a space), in particular, in those cases where Western Grammar is not allowed to separate a subject from its verb (and the like). However, in Turkish, for instance, it is indeed more than ‘correct’ to write: Ahmet, Ankara‘dad’i [¿hмет’زةرکارا.دادود,] ‘Ahmet is in Ankara’.

With orthological structures as the following, we would have quite different meanings from those given above (though pragmatically less probable indeed): Have you read this book? [¿hевип’ر’ve’d ðисбо], Do you like music? [¿д(о)л’асск ‘музик’], Do you know where John is? [¿д(о)лн’овс’вэд’ф’нюак’], Is the station far away from here? [¿дд’стейн ‘дэ’ у’ве’ф’вом’мук’], Is there a library near here? [¿дд’ра’льабд’и’ н’в’в’му’].

13.18. On the contrary, partial questions (or wh-questions, or yes/no questions) include specific (interrogative) words, such as who, what, which, when, where, why, whose, how, how much, how long… Clearly enough, the answers regard the part of the questions where the interrogative word occurs, since the rest of the questions themselves is already known, or shared, or implicit.

If somebody asks us: How many languages do you speak? [¿’хаомэн’ льгёнвр-дзй, идлип’рик], it is obvious that they know we happen to speak some languages; and if we say Who told you that? [¿’ру ’гг’д’д’д’д’], or How do you know? [¿’п’м’д’н’о’д’д’д’], that piece of information is something known, or ‘given’.

Therefore, the voice falls at the end, as for a conclusive sentence. Indeed, the questions just seen could even be formulated as: I’d like to know how many languages you speak, and You must say who told you that, and Tell me how you know.

However, even if in partial questions the conclusive tune has to be used (which is falling just as in statements), there is certainly some pitch difference (apart from an obvious syntactic one) between a question like When will they buy a new computer? and a statement like When they buy a new computer. This also occurs in languages with identical syntactic patterns, as in Italian Quando comprano il nuovo computer? ‘When will they buy a new computer?’ and (Lo copiano) quando comprano il nuovo computer ‘(They will copy it) when they buy a new computer’.

The difference is in the protune. As a matter of fact, all kinds of questions have something in common, i.e. the interrogative protune, /¿/, which, as can be seen in fig 13.3, has a partially different pitch contour from the one used in normal pro-
tunes. This difference consists in modifying the usual pitch movement, through
the anticipation of the typical interrogative curve (/?/ [-'']), which in neutral Brit-
ish English pronunciation is rising – from mid to high pitch.

The anticipation in question, however, does not exhibit the actual change from
mid to high, but reproduces it on a small scale, by distributing pitch heights a-
mong the stressed and unstressed syllables. Thus, it modifies the usual contour of
the unmarked protune only partially.

Nevertheless, this is quite sufficient to make the difference perceptible right
from the beginning, ie on the very first syllable(s). So, in the Italian examples too,
the difference is surely there already on Quan-, and increases on -do (and so on –
only together with a different degree of stress). But the symbol /?/ alone is suffi-
cient to indicate the pitch difference that the ear clearly hears: Quando comprano
il nuovo computer? [kwando komprano, il'nwO;vo kom'pju:ter-], in comparison
with Quando comprano il nuovo computer [kwando komprano il'nwO;vo kom'pju-
ter-]. Going back to the English example, we have: When will they buy a new
computer? [wen-] and When they buy a new computer [wendeg'ba: a'nju:u kum'phi:jju:te:].

Besides, as all of the partial questions, these too can be said with a continuative
tune (which renders them less categorical), or by attenuating the tune (cf § 13.21-3).

The question about the computer already shows that the plan of buying a new ma-
chine (hopefully a new Mac) was ‘known’, or ‘given’, not a ‘new’ fact. Equally, we
have a parenthesis as soon as an example like When are you leaving? [wen: a'ljivn-]
becomes a known fact as far as the departure is concerned: When are you
leaving? [wen:, a'ljivn-]. Usually, this also happens –for pragmasemantic rea-
sions– in sentences like: How much does it cost? [hao'meT, œd'zik'khosf-]; whereas
realizations such as How much does it cost? [hao'meT œd'zik'khosf-]; are to be found
only in ‘teaching’ recordings (and, unfortunately, what we actually hear, in too many
recordings, is How much does it cost? [hao'meT œd'zik'khosf-], indeed!).

13.19. Let us briefly move back to the kind of intonation used at school, which
makes people say *{wen- ] de'ripa: a'nju:u kum'phi:jju:te:}* *When will they buy a
new computer?* whose meaning, strictly speaking, would be closer to ‘Would you
mind repeating that? I didn’t quite catch what you said. Did you ask about when
they’re going to buy a new computer?*, ie When will they buy a new computer?*
[wen- ] de'ripa: a'nju:u kum'phi:jju:te:]* (where * indicates a higher pitch raising).

In actual fact, there is a big difference, since the classic ‘bookish question’ (as we
will see presently, in § 13.20 & 13.25) is: {wen- ] de'ripa: a'nju:u kum'phi:jju:te:}. That is,
an interrogative tune is added at the end of conclusive tunes ([..]+[*]), as if it were not real communication, but rather a kind of drill in order to ‘identify’
a question, and by ‘concluding’ it –only at the end– with what is thought to be ex-
pected (according to the ‘rules’, ie with an interrogative tune).

However, this operation goes against the rules of real communication com-
pletely; and practically without distinguishing between total and partial questions.
Indeed, even a question like {wen- ] de'ripa: a'nju:u kum'phi:jju:te:} What’s your name? is a classic ex-
ample, instead of [wen- ] de'ripa: a'nju:u kum'phi:jju:te: What’s your name?
13.20. There is also a difference between: How many times shall I say that? [¿’haø,meni ’tha’æmz; Ølä’së’æf,] –a normal partial question– and How many times shall I say that?! [¿’haø,meni ’tha’æmz; Ølä’së’æf,] –a (partial) rhetorical question, which certainly does not ask for information about the number of times, but instead communicates a meaning like ‘Will you obey me at last?’ (please, note the emphatic stresses).

In addition, there can also be a polite partial question: How many times shall I say that? [¿’haø,meni ’tha’æmz; Ølä’së’æf,], which uses the unmarked continuative tune in order to make the question less brusque, as in What’s the time? [¿’wøts δø’tha’øm,], Who is it? [¿’hµu ’uzf,], decidedly more suitable, above all with strangers, than What’s the time? [¿’wøts δø’ha’øm,], Who is it? [¿’hµu ’uzf,].

All this demonstrates that syntactical punctuation and word order are not at all sufficient to determine which kind of intonation is the most appropriate for a given sentence.

Besides, if people ask Can you hear me? [¿kunjø’høm,], their intention is certainly not to check whether their listener’s hearing is (still) good, but rather whether it is possible or not to ask them for something, talking normally.

Obviously, there are many nuances which can be detected in the various kinds of questions that –every day– we can produce or hear. These questions may be participating, polite, inquisitive, formal, detached, ironic, sarcastic, and so on. In all these cases, the paraphonic component, with its varied facets, highly modifies canonical intonation patterns, which are so to say ‘expected’, producing mixtures of protunes and tunes, too.

Tune modifications

13.21. Even a sentence like Put it on the table [’phøj-µ Øn∂ø’høfib,] can be said with different intentions. In fact, Put it on the table [’phøj-µ Øn∂ø’høfib,] can sound too brusque and impolite, or too familiar and friendly; these nuances are not explained by syntax, but rather by pragmasemantics. Therefore, often attenuation may be introduced, which can be shown by placing an empty dot at mid height [:] Put it on the table [’phøj-µ Øn∂ø’høfib,].

We have seen above that, for repetition (or incredulity) questions, the tune is accentuated. At the end of a conclusive utterance, and especially at the end of a text paragraph, it is frequent and normal to use the accentuation of the conclusive tune too: And this ends our programs [Øn’døs ’øndz a’phøjøgøm,].

13.22. Often, again for pragmasemantic reasons, utterances are specified, when their communicative highlighting –or sentence highlighting– is not on the final part of an utterance (as generally happens), as we have already seen in some previously presented questions.

For instance, I’ve bought the tickets for the concert [aøv’høsøt dø’hik-ts fødørkøm,] we find a ‘normal’ tuning expected according to the tonogram. However, one may have to say: I’ve bought the tickets for the concert [aøv’høsøt,dø’hik-ts fødø-
possibly even with some emphasis: I've bought the tickets for the concert [ævˈbɔːt ˈkɔntərkt, ˈdəθɛθʊkt-ts fəˈdʌrkwɔːnsər], as an answer to a rather doubtful question about somebody's efficiency or memory.

From a pragmasemantic point of view, the most likely intonation pattern, for a question like Have you bought the tickets for the concert?, is Have you bought the tickets for the concert? [ˈhævuˈbɔt ˈdəθɛθʊkt-ts fəˈdʌrkwɔːnsət], contrary to school performances and, unfortunately, to most recordings in various teaching courses too, which instead foist absurdities such as Have you bought the tickets for the concert? * [ˈhævuˈbɔt ˈdəθɛθʊkt-ts fəˈdʌrkwɔːnsət]. Strictly speaking, a sentence pronounced like that would really mean something like 'Why did you buy the tickets for the concert, you silly idiot!'

13.23.1. The best way to attract (much) attention to what somebody is going to say is to use a suspensive tune: If they haven’t understood I really don’t know what to do about it! [ɪf ˈθeɪ ˈhæv ˈhænt ʌndərˈståpt ɪr ˈriːl ˈdən tʊ ˈnoʊ wʊt ˈtʊ ˈdə bəˈæbət ut], And when at last I came round the corner, they were already there [ən ˈwɛn ə ˈsɜːsət əkˈkɛrəm ˈθeɪ ənd ˈdəwkwɔːnər], or to clearly separate the parts of an utterance: Are you going by bus, or walking? [ər ju ˈgəʊɪŋ bɪ ˈbʌs ər ˈˈwɔlkɪŋ], or to announce in advance the end of a complete list of items: Apples, pears, strawberries, cherries [ˈæp, ˈpɛəz, ˈstrɔːbərriz, ˈtʃeəriz].

A suspensive tune can also occur at the end of particular incomplete utterances: I did try... [aɪ ˈdɪd ˈtrai...], You’ll see one day or another... [juːl ˈsiː ˌwʌn ˈdeɪ ər əˈnʌðər...]. ‘Intermediate’ degrees are possible: I did try... [aɪ ˈdɪd ˈtrai...], You’ll see one day or another... [juːl ˈsiː ˌwʌn ˈdeɪ ər əˈnʌðər...] (with attenuated suspensive tunes); I did try [aɪ ˈdɪd ˈtrai...], You’ll see one day or another... [juːl ˈsiː ˌwʌn ˈdeɪ ər əˈnʌðər...] (with attenuated conclusive tunes); and I did try [aɪ ˈdɪd ˈtrai...], You’ll see one day or another [juːl ˈsiː ˌwʌn ˈdeɪ ər əˈnʌðər...] (with no attenuation of conclusive tunes). Obviously, they present different communicative nuances, which are fairly easy to imagine.

In addition, some particular words can receive emphasis. Here we will not enter the field of paraphonics, which adds further nuances, i.e. emotional (e.g. sadness, shyness, threat...), and social as well (e.g. skill, supremacy, arrogance...). Certainly, these characteristics are real and present, in actual communication, but they are even more complex to analyze, describe, and transcribe. Unfortunately, too many intonation analyses and notations are still unable to adequately separate these two quite different fields of intonation, although, obviously, in speech they are inseparable, but... distinct! This means that it is important both to develop full awareness and to succeed in using a notation system which is fairly appropriate, but obviously not too simple. However, see §14.

13.23.2. In some languages, such as English and French, but also Italian and others, according to communicative aims, when there are some implications, quite frequently, a suspensive tune may be used (with or without attenuation, or possibly accentuation), or a continuative one.

This use is more likely to be found in phrases like the following, in place of the tune one might infer from writing and syntax: Hi!, I’d like a pizza, Go straight a-
head, Make yourself at home, Can I have that chair? or in French: Bonjour!, J’aimerais bien une pizza, Allez tout droit, Asseyez-vous, Ce n’est pas possible! or in Italian: Ciao!, Vorrei una pizza, Vada sempre diritto, Saccomodi, Posso prendere una sedia?

Quite often, these two tunes are used—instead of conclusive (or attenuated conclusive) ones—when there is no real planning of what is being said, differently from what actors do with a text they already know and have ‘studied’, just to render it in the best possible way (and there is a difference—which is quite easily noticed!).

When people talk with no previous planning, in addition to the task of putting together the things to say, another problem arises: trying to avoid being interrupted by their interlocutors, while trying to manage to collect the ideas they want to present. Thus, using different tunes from the conclusive one, obviously, also has the aim to try to achieve this very result, and at the same time communicating that the speakers have not finished their exposition yet.

13.23.3. Another frequent use of non-conclusive tunes derives from the insecurity—or weak conviction—of the speakers about what they are saying, or towards their interlocutors felt to be ‘dominant’, by superiority of prestige, role, age...

Often, it is a real behavioral implication—of the speaker, not about the message—which conveys ‘non-invasiveness’, in different mixtures of friendliness, deference, hesitation (precisely with /\, or even simply /\).  

However, sometimes it is actual invasiveness indeed—although not really aggressiveness—due to an excess of liveliness or talkativeness, which prevent the speaker from taking pauses and almost breathing, with the result that normal conclusive tunes are practically missing (or are very much attenuated). On the contrary, more pauses and more conclusive tunes would give the listener relief.

Indeed, this use of non-conclusive—ie continuative or suspensive—tunes includes reported cases of ‘rising tunes’ above all for variants of English (firstly from New Zealand, Australia, and North of England, but now even for the rest of Great Britain, and for Ireland and North America, too), instead of the expected or predictable conclusive tunes.

Although this phenomenon has been detected and described in the areas just mentioned, it is nevertheless not absent elsewhere, and for other languages. Neither is it something absolutely new, but simply something which can show itself more freely—alas!—without real drawbacks or excessive social stigma.

However, the problem of these reports (even of ‘high rises’, as in [total] questions) arises from the fact that, still too often, intonation is dealt with according to the old method of the British school of phonetics, which is mainly based on two opposing types: falling and rising (although the British method of intonation had been really innovative and praiseworthy, in the first half of the twentieth century [even compared to other schools and methods, even currently followed by some, as the so-called ToBI, which tries to do tonetics by using computers, ie using one’s eyes instead of one’s ears).  

Unfortunately, the ‘rising’ type included both interrogative tunes (usually: [\ · \'], but also [\\ · '], &c) and suspensive tunes (generally: [\ · '], or [\ \
 · ' \ · '], or [\ · ']
[\ · ' \ · '], and [\ · ' \ · ']), which really have rising movements on the post-tonic sylla-
bles; but on (quite) different levels. In fact, for /?/ the terminal post-tonic syllable is high indeed, whereas for /÷/ it remains within the mid band, as can be clearly seen in our tonograms, including the ‘Oceanian’ ones of Australia and New Zealand. Therefore, they must absolutely not be combined in descriptions (although this is just what is still done, too often, indeed).

The solution to this problem is to adequately separate the ‘linguistic’ level of intonation (ie the linguistic system) from the ‘paralinguistic’ one (ie paraphonics). Of course, machines cannot do that, since even environment noises ‘are a part’ of a sound message for a machine. Rightly, it is up to ‘natural’ phoneticians to define in advance an inventory of tunes and protunes, with their actual realizations, in order to be able to separate them from paraphonic superstructures, which are additional. No doubt, the latter belong to language usage, but not to intonation proper (or linguistic intonation). Instead they belong to paralinguistic intonation. It is quite obvious that rising post-tonic syllables, if modified by an equally rising superstructure, produces the global, ‘raw’, result consisting in an even more rising movement. However, the analyst’s experience and skill could avoid gross errors such as those of interpreting the pitch movements as if they really belonged to the intonation system of a given language. On the contrary, they are the (natural and inevitable) result of the combined actions of (true) intonation and paraphonics (according to pragmatic, geographic, and sociolinguistic characteristics).

A similar case of communication %description misunderstanding occurs when some northern Italians (in particular from the northeastern region of Veneto) use suspensive tunes with post-tonic syllables of the [.] kind, or similar continuative tunes (with a limited rising movement, ie within the mid band, but still of a rising kind). Indeed, people from other regions often interpret such post-tunes as if they were [‘], ie interrogative, whereas they are nothing of the kind (neither physically, nor intentionally).

fig 13.5. Attenuation of tunes.

\[
\begin{array}{c}
\text{attenuated conclusive } /-.// [.\,\ldots] \\
\text{attenuated interrogative } /?./ [.'\,\ldots] \\
\text{attenuated suspensive } /;/.// [.'\,\ldots]
\end{array}
\]

fig 13.6. Accentuation of tunes.

\[
\begin{array}{c}
\text{accentuated conclusive } /,.// [.'\ldots] \\
\text{accentuated interrogative } /?.;// [.'\,\ldots]
\end{array}
\]
fig 13.5 shows the attenuation mechanism of marked tunes (we briefly mentioned above), whereas fig 13.6 shows the accentuation mechanism of the two tunes which are functionally the most opposing (conclusive and interrogative – already mentioned too).

Parentheses & quotations

13.24. Lastly, again in a concise way, let us consider fig 13.7 which shows the diagram of parenthetic phrases (which can be low or mid, as we will see presently) and of quotations. Here we will illustrate parentheses and quotations: First of all – he said – let’s consider ‘natural’ phonetics, as it’s properly called [‘fərsf əvɔːt ħɪsɛd ‘lɛts kʌn-sid ə ‘nætʃɪ]. ‘fənɛtɪks, ɑzɪts ph40p ‘æli ‘khɔːt].

Parentheses are characterized by a reduction of stress, an increase in the rate of speech, and low or mid compression; whereas quotations have an increase in stress, a reduction of rate and a raising of pitch (without compression). Therefore, quotations are – practically – the opposite of parentheses.

In transcriptions, it is neither necessary nor recommendable to try to show these prosodic peculiarities, not even with regard to stress, which remains marked as usual (without notational reductions, [], or accentuations, “). The symbols [], [], and “] are more than sufficient to bear in mind all these differences, with respect to ‘normal’ utterances.

Obviously, quotations must not be confused with ‘direct speech’ – since, in First of all – he said – let’s consider ‘natural’ phonetics, as it’s properly called, only he said would be excluded, because all the rest (and what may follow) is direct speech, indeed.

Considerations on communicative ‘roles’

13.25. We have already talked about ‘bookish intonation’ (§ 13.15). We will now study in depth ‘bookish questions’ as well (mentioned in § 13.19-20). Considering things from the outside, some typical and recognizable superstructures are fairly easy to find. As a matter of fact, a bookish question is the sum of a (substantially affirmative) sentence and a (substantially interrogative) communicative function. They use a conclusive tuning – ie a normal protune followed by a conclusive tune – modified by a role interrogative tune: / /. / + / ?/ ‘. ‘], without even distinguishing between the two fundamental types of questions – total (/ ʔ/ [ʔ ‘]) and partial (/ ʔ. ‘. ‘]).

Contrary to the rules of actual communication, in bookish questions something is stated (which is the literal content of an utterance), and only at the end something
else is added like *there is a question too* (but with no real fusion of the elements).

For that particular task, then, it is not at all important (to try) to realize the two different types of question as in actual speech: it is only a ‘task’ to perform! (… nothing more.) Thus, instead of using an interrogative protune and other tunes fit for conversation, the structure indicated above is provided: `/+/?/ [.] [+^].`

13.26. During a lecture on Phonetics, if we give the example of a (partial or total) question without introducing it —as usual— by stating first ‘for instance’, but saying it exactly as: *What’s the time?* [zendts dəhəwəmə], or *Is it raining?* [ziizəxənə], even the most attentive students, at least for a short while, will feel obliged to answer.

However, the situation of a lecture is exactly one of an ‘implicative’ superstructure or a ‘role’ superstructure, which makes what is being said clear, so much so that it is often not easy to avoid the tautology that makes one say: ‘let’s give an example, for example: x, y, z’ [letz Gunənəmp, fəngəmp, ‘eks wə-wə-zeq].

It goes without saying, of course, that the intonation examples given during a lecture (or a lesson, or used as a drill) must—or should—aim at spontaneous conversation as far as possible, getting rid of the typical —frankly unbearable— superstructure of the teaching situation.

13.27. Actually, even *bookish intonation* is a prosodic superstructure, which is added to a whole *text* presented to someone. The function of all those monotonous sudden rises within a text (also corresponding to the end of a concept, or a categorical statement, even an emphatic one) is that of communicating that the speaker has not yet finished talking and does not want to be interrupted.

In the case of someone who is reporting something (rather than expressing one’s thoughts), like a story or the subject of an oral examination, even an implicit reference to the temporary incompleteness of the text is added; whereas its completion is implied by the final pitch lowering, which opposes the (higher than usual) pitch of the beginning.

There is also an ‘acceptable’ version of bookish intonation, which consists of the typical pattern of an *exposed* text (ie mental, not a read one). Therefore, it is not a conversation —nor is it a soliloquy— because a superstructure is added which gives the characteristic of a *text exposition*. It is recognized by the fact that it presents mechanical and ‘regular’ pauses (which are never too long), and quite attenuated tunes, but most of all they are ‘completed’ by slight sudden rises from low to mid pitch, which are indicated by adding [;] after a tune.

We will now give an example and compare it with real bookish intonation — Thus, in such cases, one must keep calm, follow the instructions, and think long and hard before acting:  

(conversation) [dəs in-set kheisiz, wem məskhip kham, ŋol-30 diunstek-sən, ěn thəŋkin lən unhac, bfgəxtənk];

(exposition) [dəs in-set kheisiz, wem məskhip kham, ŋol-30 diunstek-sən, ěn thəŋkin lən unhac, bfgəxtənk];

(bookish reading) [‘dəs in-set kheisiz, wem məskhip kham, ŋol-30 diunstek-sən, ěn thəŋkin lən unhac, bfgəxtənk].
Notice, for exposition, the difference in the relative height reached by [.] (ie lower than [.]'), and the quite normal pitch at the beginning (in comparison with ['] of bookish intonation).

Furthermore, in bookish intonation, hesitations can be frequent, generally realized as longer than usual unfilled pauses (cf § 13.4), but often they may become filled pauses, with autonomous ‘syllables’: [b, v, z, ñ, m, hø], or with (paraphonic) draws (not regional ones such as those typical of the American ‘Deep South’): but the-en you’ll ha-ave to wai-it... [bæθˈeɪn ˈjuːəθˈæv ˈwεɪəθ]. A well-done exposition will limit hesitations to the most, unless they are ‘intended’ to reach two aims: to draw somebody’s attention to certain points, or to fake spontaneous speech, as when improvising, in order to be more welcome and seem smarter.

13.28. TV news presents a [• • • • • •] superstructure, which permits one to identify the beginning and the end of every piece of news. Good newscasters restrict themselves to this superstructure, which is necessary and crucial, while accurately avoiding introducing the excessive internal (sudden) rises, which are typical of bookish intonation. But, too often, the news is unduly and arbitrarily segmented so that its utterances are even distorted, to the point that they can communicate different –or even opposite– senses, as regards the actual meanings of the information intentions. Furthermore, these pauses are quite mechanical and short (but, above all, different from those of ordinary conversation), whereas, near the end of a piece of news, there is frequently an interruption between the last stress (ie the one on the tonic syllable) and the preceding one. All this happens independently from internal cohesion (which would be necessary among the elements), so much so that even a first name is separated from its family name, a verb from its direct object or adverb, and an adjective from its noun, &c: *...the famous opera by Giuseppe Verdi; *the efforts to accelerate the structural reforms of the economy; *...with new proposals;...

The last examples show that often the normal structure is irrationally distorted; whereas, in previous points of a piece of news, more often distortions regard cases such as: *...the Cannes Film Festival – instead of...the Cannes Film Festival. Often, within a piece of news, newscasters do not keep the end of a sentence separated from the beginning of the next one: *...they decided to meet in London they also promised... – instead of...they decided to meet in London they also promised... (ie...they decided to meet in London. They also promised...).

13.29. Obviously, there are many other communicative roles, which must allow people to realize that spoken words are not to be interpreted in a personal way, as among friends or acquaintances. On the contrary, it must be clear that they are to be interpreted as a part of a role, thus in an absolutely impersonal way, as operator and client. For instance, a ticket collector (fares, please), a postal worker (good morning), a switchboard operator (hello, we-are-the-best-in-the-world), a shop assistant (good afternoon, Sir, can I help you?), a stewardess (flying with us is a pleasure and a guarantee), a Far-West sheriff (howdy, stranger!).
Their messages (beyond the expected meaning, which is practically superfluous) want to communicate, above all, 'we are just doing our job, and we want you to know'. Therefore, the (ticket) collector, the (postal) worker, and the (switchboard) operator will use paraphonic pitch compression: ⟨⟨⟩⟩ ⟨⟨⟩⟩, avoiding using a conclusive tune. Whereas, the (shop) assistant, the stewardess, and the sheriff will make use of paraphonic raising, emphatic protunes, and again continuative tunes: ⟨⟨⟩⟩ ⟨⟨⟩⟩ (cf. fig 14.1).

After all, even every-day greetings among people known by sight, who are not on intimate terms, are just kindnesses, which simply show peaceful coexistence (in comparison to cutting somebody dead); thus greetings can not be either omitted, or too friendly: good morning ⟨⟨ɡoɡˈmʊnɪt⟩⟩, good evening ⟨⟨ɡoɡˈɪvɪnt⟩⟩; in fact, generally, they are reduced to: morning ⟨⟨ˈmʊnɪt⟩⟩, evening ⟨⟨ˈɪvɪnt⟩⟩, or even to ⟨⟨ˈmʊnɪt⟩⟩, and ⟨⟨ˈɪvɪnt⟩⟩.

13.30. Let us now also consider ‘child-like’ reading. Everybody can easily recall it and recognize it at once (rather annoyingly). However, this is a ‘role’ again with its conditions. In fact, child-like reading has the typical ‘textual’ superstructure [: ; ; ; ; ; ;], with the addition of emphatic stress (but without using an emphatic protune) on each expected rhythm group (but also with more subdivisions that often produce two tunes instead of only one).

Obviously, even bookish questions (or child-like questions) are included in this pattern. Again they are parts of an utterance which are artificially separated and maintained together only by textual superstructures (not by real conversational strategies).

Let us give an example, by comparing the structures of conversations with the superstructures of expositions and child-like readings – To prepare a tasty vegetable soup, the ingredients must be chosen very carefully. What do we need?:

(conversation) [θερˈɪpʰeʒə əθ eiˈsi vɛdʒˈɒbjʊmp r ˈdiŋˈɡɪpiənts ˈmæbi ˈθɜəzn ˈveŋˈɪkhesəli .] ˈənd ˈdʒuˈwɪnɪɾɪd .]

(exposition) [θερˈɪpʰeʒə əθ eiˈsi vɛdʒˈɒbjʊmp r ˈdiŋˈɡɪpiənts ˈmæbi ˈθɜəzn ˈveŋˈɪkhesəli .] ˈənd ˈdʒuˈwɪnɪɾɪd .]

(child-like reading) [ˈθερˈɪpʰeʒə əθ eiˈsi vɛdʒˈɒbjʊmp r ˈdiŋˈɡɪpiənts ˈmæbi ˈθɜəzn ˈveŋˈɪkhesəli .] ˈənd ˈdʒuˈwɪnɪɾɪd .]

fig 13.8. Paraphonic structures of: conversation (A), exposition (B), TV news (C), and bookish intonation (D).
The (alleged) ‘remedy’ prescribed by schools, in order to avoid the dullness of child-like reading, leads to flattening (with pitch compression of the internal parts), to increasing rate (with the reduction of many stresses), and to hypo-segmenting utterances (with the suppression of many tunes), with a loss of the wished expressiveness.

Considerations on intonation

13.31. The fundamental criterion for ‘choosing’ the appropriate tunes, for each sentence, consists in the communicative intention of every single sentence, or sometimes of a part of a sentence, which thus receives a certain tune, often without an actual pause. But the absence of pauses must not make people think that the stream of syllables and words is constant and homogeneous: intonation differences are there (indeed!) in spite of the connection among syllables. Rightly these pitch differences, which are included in the typology of linguistic intonation, convey the nuances of meaning that native speakers instinctively recognize, and thus (re)act accordingly.

Therefore, it is not sufficient to have a continuative tune, which is used mainly for subdividing the speech chain into pragmasemantic sequences. These are of fundamental importance to communicate what people think, in order to interact with others. Thus one of the three marked tunes is chosen.

A conclusive tune, as we have already seen, adds to the concept being expressed the communicative function of completeness. An interrogative one adds the function of request, generally with total questions and, occasionally, with clarifying questions, when people have not (fully) understood or think they can not believe an interlocutor or their own ears.

Lastly, a suspensive tune is used to draw attention to what somebody is going to say (or not to say), or to some more or less relevant alternatives.

When people are not slave to syntactic punctuation (if any – or at least syntactically appropriate), in order to obtain satisfactory results, it is sufficient to apply the right communicative aim to one’s thoughts. However, it is quite obvious that, if people do not really know the intonation patterns of their own language (ie in a perceptive and productive way as well – not only theoretically), the result will be a performance which is either regional (for native speakers with no falterings or hesitations), or decidedly foreign (if they try to use the patterns of their own language while speaking another one).

13.32. Since some tunes (and protunes) of certain languages may be very different from those of others, or even opposite (or can remind some opposite functions), it is important to consider the provided tonograms very carefully, to compare them with those of one’s own mother tongue (or a regional variant of it), if they are available.

Otherwise, it is highly advisable to endeavor to get them, and try to grasp the
differences of the tonograms of other languages or those of the neutral (or ‘standard’) accent of one’s own tongue. If one is able to sing in tune, the operation proves to be better, but this is not at all indispensable: what is essential is to have the will to make this comparison (if one is convinced).

Certainly, a significant number of speakers of tone languages are ‘out of tune’, and yet they all use their ton(em)es adequately, as for instance Chinese men and women do (and, of course, children as well, if not too young).

Obviously, even less clearcut behavior is to be expected. For instance, a question like *Who wrote ‘Romeo and Juliet’?*—instead of the answer *Shakespeare* [ʃeɪkˈspɪr,]—might receive a not too sure one, like *Shakespeare* [ʃeɪkˈspɹə,], or even a far less positive one, like *Shakespeare…* [ʃeɪkˈspɹə,], where the interrogative protune seeks confirmation.

More convinced answers like *Shakespeare!* [ʃeɪkˈspɹə,] (ie emphatic) or *Shakespeare!* [ʃeɪkˈspɹə,] (ie imperative) would still be different from *Shakespeare* [ʃeɪkˈspɪr,] in the opposite direction.

These principles hold for all languages, but—obviously—they have to be realized with the actual tonetic characteristics (typical of every single language).

The treatment of the intonation of the various languages (in our *HPr – A Handbook of Pronunciation*) might seem to be too sketchy (especially to a hurried reviewer); indeed, it contains all the indispensable elements for the 12 languages dealt with (and their numerous variants too). Instead, in the second part of our *NPT – Natural Phonetics & Tonicetics*—the *Phonosyntheses*—or *Synopses*—contain only the unmarked protune and the three marked tunes; however, even from these more basic elements, it is quite easy to obtain both the marked protunes and the unmarked tune. This is true both as a general expectation and as an actual work of elicitation.

The three marked protunes are influenced by the three marked tunes, especially on their intertonic syllables. While, the unmarked continuative tune is influenced both by the conclusive and suspensive tunes, being a kind of average between them.

What is important, for intonation, is to bear well in mind all that has been said in this chapter, of course, after having internalized all the motivations and mechanisms.

**Structures & generalizations**

13.33. The experience obtained with the intonation systems of hundreds of languages allows us to state that the normal, or *basic*, intonation structures are the unmarked protune (/ /) and the three marked tunes (/?/ with /?/ and //?). In addition, we also speak of *fundamental* protunes and tunes: they include the interrogative (/?/), imperative (/?/), and emphatic (/?/) protunes.

The three marked protunes announce in advance, in a compressed form (although not necessarily within the mid band, depending on the language), the typical pitch movement of the interrogative (/?/), conclusive (/?) and suspensive (/?) tunes—respectively—differentiating them from the unmarked, normal one (/ /).
On the other hand, the unmarked, continuative tune (/\) neutralizes the functions—and the tonetic substances, as well—of the three marked ones, producing a compressed movement within the mid band. This movement represents their fusion, by flattening the differences, even though given proportions typical of the original marked tunes are maintained, which contribute towards the differentiation of languages. This remains within the mid band (as can be seen in fig 6.19, fig 6.21, fig 13.4 and fig 13.10 (and in those of the 12 languages of HPr)).

Therefore, the necessary and sufficient notation is simply \[\text{\textbullet\textbullet\textbullet\textbullet}\], with a single post-tonic dot, in order to distinguish it—fairly easily—even from suspensive tunes of a mid type, \[\text{\textbullet\textbullet\textbullet\textbullet}\], which is normally used in certain languages. Only occasionally, it may be necessary to exceed an inventory of four protunes and four tunes, as happens in neutral French and certain similar accents (cf § 13.9 and, in HPr, Ø 4). For some other languages, the interrogative protune—although remaining only one—is slightly different from the normal type, as happens in Galician, Greek, and Rumanian (cf their phonosyntheses, § 17.1, § 17.53 & § 17.62).

13.34. In tone languages (though, more strictly, they should be called toneme languages) as Chinese and also Japanese (cf Ø 11-12 of HPr, and the phonosyntheses of other tone languages, in Ø 17-22 of NPT), protunes and tunes are subject to modifications with regard to the extent of their pitch range.

As a matter of fact, in general (cf fig 13.9), a normal protune is slightly compressed downwards, \[/ / [\], whereas an interrogative protune is compressed upwards, \[\text{\textbullet\textbullet\textbullet\textbullet}\]. An imperative protune undergoes a certain compression, which starts high, then gradually goes down to end in a low position, \[\text{\textbullet\textbullet\textbullet\textbullet}\]. Finally, an emphatic protune does not usually present any compression, remaining completely expanded, \[\text{\textbullet\textbullet\textbullet\textbullet}\].

With regard to the tunes of the various tone languages (cf fig 13.10), the conclusive one compresses pitch downwards, gradually, from its beginning (or, as in Japanese, in a more sudden way, at its end).

More often, an interrogative tune is rising-falling, \[?/ [\]; or else rising, \[?/ [\]. The suspensive tune is the most varied one: more often it is expanded (with no particular pitch movements and without compressions), \[?/ [\]; or else it is rising, \[?/ [\]; sometimes it is falling-rising, \[?/ [\]; or more rarely it is rising-falling, \[?/ [\].

As happens with the other languages as well, certain different tonemic functions can have similar tonetic realization, and vice versa.
fig 13.10. Tunes for tone languages.
14. **Superstructures**  
(with ‘paraphonic intonation’, as well)

14.0. ‘Role’ superstructures, or task superstructures, have been introduced, with some examples and classifications, in the sections about intonation, since they are strictly connected with intonation structures (§ 13.25-30). More properly, we might define them as ‘co-structures’; but—to avoid complicating things too much—although maintaining the definition ‘superstructures’ (which are the subject of this chapter), we leave them in the relevant chapter about structures. These co-structures will be presented in a chapter of their own, when they can be studied in greater depth and classified thoroughly. Equally, the chapter on super-structures will (and shall have to) be expanded considerably and more systematically.

**Paraphonics**

14.1. When the vocal folds (cf. fig 14.2) are vibrating along their whole surface, the result is the so-called **chest voice** (with actual vibration of the thorax as well); whereas, we get **head voice** if the folds are vibrating only at their sides (thus the thorax has reduced vibration). There are two further quite important positions of the glottis: those which produce **falsetto** and **creaky voice**.

**Falsetto**, or false voice, is an artificially higher than normal tone of voice, which can be used for expressive, phonostylistic, paraphonic purposes; it is achieved by lengthening the vocal folds more than usual and making them thinner, while they are kept ajar and only the arytenoid cartilages are firmly closed together; therefore they vibrate in a different manner than usual. The larynx itself is deformed a little, and lengthened forwards, as can be seen in fig 14.3. There is little air expenditure, and a general impression of higher pitch and effort than normal. In Hindi, for instance, falsetto is connected with the higher parts of its tunes.

For **creaky voice**, or **laryngealization**, instead, the vocal folds are less tense and less thin than usual, whereas the arytenoids remain firmly closed, so that only the part of the folds not in contact with them are free to vibrate. The folds are completely lax, and produce a series of quick glottal taps and a pitch impression which is lower than usual (fig 14.3).

We can find creaky voice in some languages, in conjunction with low pitch, as at the end of certain conclusive tunes, which are falling, or, as in Mandarin Chinese, in conjunction with the low parts of tunes. In British English, creaky voice on a conclusive tune is considered as upper-class: **Yes, indeed** [ˈjɛs ɪnˈdɪd]. Or, in American English, creaky voice is often connected with female speech.

Two other particular phonation types, with paraphonic importance, are **tense voice** and **harsh voice** (fig 14.3).
14.2. By the term paraphonics we mean the particular—additional use of phonic (ie articulatory and phonatory) and prosodic elements in current speech. This use is spontaneous (but it can also be fictitious, as good actors demonstrate), and it helps to indicate the speakers’ attitudes (towards topics or listeners), emotions or states of mind (which can be transitory, in a particular moment, or constant/ steady, habitual), and persons’ social role (in certain different communicative situations).

Generally, paraphonic elements seem to be universal, ie used in every language. Indeed, even without understanding a given foreign language, we can usually intuit, or deduce, the speakers’ attitudes, feelings, and social roles. Instead, the social rules—more or less unconscious and governing the use of paraphonic elements—are generally very different.

In some cultures, for instance, certain ‘negative’ feelings must not be expressed, whereas others may be, and ‘positive’ ones must even be heightened. In other cultures, though, the opposite may be true. Moreover, there are upper and lower limits, changing according to the speakers’ age, sex, their social roles, and other more or less complex variables.

Here, we shall just explain the characteristics which—alone or combined—contribute to give paraphonic information, when they are superimposed on, or inserted in, the speech chain.

In transcriptions, paraphonic elements are usefully indicated in angled brackets, ( ), in order to identify them clearly and to distinguish them better from prosodic elements, which are more typically linguistic. In fact, the phonic and paraphonic levels should never be mingled, even if, in actual language, they are inextricable.

If one does not do so, the description of intonation characteristics becomes not only too heavy, but above all impracticable, and decidedly too subjective. As a matter of fact, even using the same recorded corpus, different phoneticians would inevitably produce different ‘data’ and descriptions (even if they used computers and acoustic phonetics programs).

**Pitch**

14.3. Of course, the first paraphonic characteristic to consider is the one that uses pitch in a different way with respect to how intonation uses it. Paraphonically differences can be greater and—what is more—of a fairly different quality, since feelings, moods, and states of mind make use of different pitch extensions.

Usually, in fact, they do not regard every single syllable of an utterance, as in tunings, where pitch is determined by linguistically codified structures (seen in §13). Although with possible variations, caused by changes in the factors determining their origin (ie moods, feelings, states of mind, attitudes, and physiological, psychological, and pathological conditions), paraphonic stretches mostly regard whole utterances of different lengths, even from minutes to hours.

With respect to the habitual pitch extent of a given speaker (within the three
categories of voices, i.e., male, female, and infant), it will be sufficient to get accustomed to recognizing, first of all, the raising of general pitch (indicated by ⟨⟩, between angled paraphonic brackets), visually and mnemonically helped by fig 14.1. There, the two white lines show the relation with the normal (pitch) extent, which is then remarkably modified depending on the paraphonic use of pitch. We can see that the pitch extent is really ‘raised’ indeed, in comparison with the one considered ‘normal’.

Now, it is sufficient to think of a label such as ‘astonishment’ or ‘aggressiveness’ and say something fitting, like: *And what’s this?* with astonished wonder, or *Don’t be a pain in the neck!* with arrogant aggressiveness. Often, we simply use raising, ⟨⟩, when we are talking to children, too: *Hello, pretty child, what’s your name?*

With other labels, we can identify the opposite movement to raising, i.e., lowering ⟨⟩, as can happen for sadness: *Oh, that’s such a pity!*

We can have simultaneously raising and lowering, too, which leads to expansion both upwards and downwards, ⟨⟩, by broadening the three pitch bands, as in cheerfulness: *Here come our dear friends!* Practically the opposite of expansion is compression ⟨⟩, which is typical of labels like sleepiness: *I could sleep like a log!*

**fig 14.1.** Paraphonic characteristics of pitch.

**fig 14.2.** Normal and paraphonic characteristics of phonation types.
fig 14.3. Some voice qualities, frequent in paraphonic use.

9. creaky voice
\( (? \ [m\hat{a}] \)\)

10. falsetto
\( (\ddagger \ [\hat{m}a] \)\)

11. tense voice
\( ([\times] \ ma] \)\)

12. harsh voice
\( ([\circ] \ ma] \)\)

Paraphonic articulatory tongue settings

14.4. As fig 14.4 shows, by reference to the vocoid space in the mouth, in addition to a normal (or laminal) tongue setting, a few others which are possible, and more or less frequent, in languages or accents. Let us carefully notice the deformations undergone by the vowel space, when one of such settings is activated.

fig 14.4. Frequent paraphonic articulatory tongue settings.
We show these changes especially for the vocoids, because the mechanism is easier to explain, making a constant reference to that restricted area in the mouth space. But, of course, contoids are also involved in each of these settings, according to their articulatory nature.

Other paraphonic elements

14.5. It is important to take into consideration the rate of speech tied to particular paraphonic labels, by comparing what can be considered as ‘normal’ to the two logical deviations, i.e. slowness (اسل) as in boredom: What a bore he is! and quickness ( hızlı), which is typical of hurriedness: Quickly now, you two, daddy’s waiting in the car!

Even the rhythm of speech is paraphonically relevant. Therefore, we have to pay attention to whether utterances are said more rhythmically than usual, (Remember), as for sarcasm: Oh, you’re very smart indeed! Besides, rhythmicity is still more evident in childish singsongs: You’re such an idiot! The opposite element, a-rhythmicity, (نادرم), may occur in shyness: I’m terribly sorry… could you be so kind as to tell me… where the station is?

The paraphonic use of phono-articulatory force, of course, is extremely important; most of all strength ({kuv}, as in aggressiveness: I’ll bash your face in!, but in liveliness as well: Come on, let’s go dancing! The opposite is weakness (پسن), for fondness: He’s a wonderful person indeed!

In addition to all this, it may be important to notice whether utterances are fluent or broken up by frequent hesitation pauses, which –as we saw at the end of § 13.27– may be ‘silent’ (or unfilled) (سپ), or ‘voiced’ (and filled) (پم). The latter are by far the most annoying ones, and may be rendered with other more realistic language-specific symbols: (شمال، و، سپ), as for: Er, well – he’s got er…, even in phonetic transcriptions: [33wεːθ hiziŋpCam].

Even particular types of articulatory quality can be added, such as labialization (زعم) in pouting: No, I won’t go any more!, or nasalization (زنت) which is possible in boldness: I won’t speak even if you kill me!, or the backing of the body of the tongue (زنت), frequent in disgust: This coffee is undrinkable!

Other settings, which can be useful for regional descriptions, are: pharyngealization, (زنت) (typical, for instance, of the broad speech of Rome), faucalization, (پسن) (typical of Liverpool English, or again of the broad speech of Catania, in eastern Sicily, cf fig 14.5), and stiff jaw, (زنت) (of so many English accents), and stiff lips, (زنت) (again, of some English accents).

In addition, fig 14.6 shows a normal jaw position, in comparison with a protruding lower jaw (زنت) and a receding lower jaw (زنت) positions.

fig 14.6. Normal jaw position (A) (زنت); protruding lower jaw (B) (زنت); receding lower jaw (C) (زنت).
Lastly, when we have a cold, our voice is chilly with denasalized nasal (and nasaled) segments; this is marked by (\(\ast\)): I won’t come tonight. The paraphonic notation is much more convenient than trying to adequately represent the affected segments as in [\(\ast\)\(\acute{a}\)\(w\acute{a}o\acute{n}\ ‘kh\(\acute{e}\)b ‘th\(\acute{a}\)‘\(\acute{a}\)\(t\)], since we should not ignore (both phonetic and phonemic) vowel denasalization either, as in French.

If we do a simple test, we can ascertain that it is nothing like \([\(\ast\)\(\acute{a}\)\(w\acute{a}o\acute{n}\ ‘kh\(\acute{e}\)b ‘\(\acute{th}\)\(\acute{a}\)\(t\)]\), or in French \([\(\acute{e}\)\(b\(\acute{o}\) ‘\(v\acute{a}\) ‘\(b\(\acute{l}\)\(\acute{o}\)]\), instead of \([\(\ast\)\(\acute{e}\)\(b\(\acute{o}\) ‘\(\acute{v}\(\acute{a}\) ‘\(\acute{b}\(\acute{l}\)\(\acute{o}\)]\) un bon vin blanc. These articulations are actually nasal or nasaled, the velum being lowered; but, the air does not manage to pass through the nostrils (either completely or in part), but it goes just to the back part of the nasal cavity, if not slightly further.

Let us note that a nasal voice (\(\ast\)) is quite another thing from a denasalized voice (or cold voice, in spite of common belief and terminology). As a matter of fact, a nasal voice can be produced by a certain lowering of the velum, but it can also be produced by some particular resonance in the nasal cavities (with no lowering of the velum), which causes a kind of local vibration. This is typical of a number of accents, also English accents; or it may be an individual characteristic.

14.6. With reference to phonatory quality, it is useful to notice whether particular types of voice occur (and to try to detect them). This also goes for articulatory quality, through adequate observations and kinesthetic considerations on one’s own articulatory and phonatory movements.

It could be possible to find murmur voice (\(\ast\)) in sadness: It’s a shame it’s all over!, or whisper voice (\(\ast\)) for conspiracy: We have to act with utmost secrecy!, or trembling voice (\(\dagger\)) of old age: I remember little Joe perfectly well, that rascal!, or tense voice (\(\ast\)) of worry: Yes, but what are we going to do?, or harsh voice (\(\dagger\)) of fatigue: I really can’t cope any more! (cf fig 14.2-3).

Besides, laryngealized voice (or creaky voice) (\(\ast\)) of sleepiness (seen above I could sleep like a log!), or false voice (or falsetto) (\(\ast\)) when men put on women’s voices: These high heels are going to kill me!, or raised-larynx voice (\(\ast\)) as in arrogance: You obviously don’t know who I am!, or lowered-larynx voice (\(\ast\)) as in laziness: I may do it tomorrow.
14.7. In addition, the shape and dimensions of Morgagni’s ventricle (ie the space between the true and false vocal folds, cf fig 14.7) determines a good part of the individual characteristics of the voice; these characteristics are then accentuated for modified by the supra-laryngeal cavities.

fig 4.7. Vocal folds (or, less well, ‘vocal cords’, 3) and ‘false vocal cords’ (1). The space in between is called Morgagni’s ventricle (2).

A typical black voice (○), either African or Black American), makes a particular use of tonality, as fig 14.8 shows. In fact, the three typical intonation bands (of our tonograms) undergo a deformation. Thus, the middle band is expanded vertically, so that the other two bands are, by consequence, restricted. In fig 14.8 this process is indicated as a transformation with ’re-normalization’.


A classification of individual voices

14.8. Individual voices can be classified according to two parameters: register and resonance. For any given voice, these parameters respectively refer to an average of their height and vibration, obtained by taking into account the intermediate excursion point of each parameter, according to statistical frequencies of oc-
currence. They range on a five-degree (though continuous) scale, departing from a middle –un-marked– value; and extending to the cells on the border of the diagram (or idiophonogram, marked with ‘+’ or ‘-‘ (df fig 14.8).

Further important information about the speakers’ (or, rather, in this particular case, the singers’) sex and age can be supplied in a simple way, as we shall see in a moment. Of course, we must keep in mind that sex and age characteristics form social stereotypes, which depend –at least– on three factors: physiological (such as anatomical dimension), cultural (such as social and ethnic habits), and individual (such as states of health). But, thanks to our own experience, we can generally manage fairly well to make our judgements about the speakers’ sex and age (except for really ambiguous cases). All this happens in spite of the (sometimes great)

fig 14.9.b. Idiophonograms with 33 voices.

- RESONANCE +

   1 Bee Gees
   2 Treble voices
   3 Kim Carnes
   4 Marianne Faithful
   5 Maria Callas
   6 Bob Marley
   7 Paul McCartney
   8 Ella Fitzgerald
   9 Louis Armstrong
  10 Grace Jones
  11 Amanda Lear
  12 Barry White
  13 Bing Crosby

- RESONANCE +

   14 Lio
   15 Nikka Costa
   16 Demis Roussos
   17 Olivia Newton John
   18 John Lennon
   19 Dionne Warwick
   20 Frank Sinatra
   21 Elvis Presley
   22 Waylon Jennings

- RESONANCE +

   23 Neil Young
   24 David Bowie
   25 Julio Iglesias
   26 Bob Dylan
   27 Luciano Pavarotti
   28 Marilyn Monroe
   29 Barbara Streisand
   30 Charles Aznavour
   31 Yves Montand
   32 Édith Piaf
   33 Liza Minnelli
differences in the use of paraphonic features made by the various cultures all over the world.

It is not so hard, however, even to determine whether a newborn baby is male or female from its first wailings. As a matter of fact, generally, a newborn-male voice has intense resonance and stronger strength, and a relatively lower register, though only a little, and still (very) high, even in comparison with child voices, not to mention (both female and male) adult voices. A newborn female voice, instead, generally has reduced resonance and weaker strength, and a relatively higher register: very high, then.

Sex can be indicated by means of a dot for female, or a square for male; when no distinction is needed or possible, as for particular groups, we use a rhomb. Age can be indicated according to four general classes: childhood, youth, adulthood, and old age. They could be shown by attaching a little bar to their symbol of sex, respec-
tively: under it, on its left-hand side, upon it, or on its right-hand side.

Of course, the two five-degree continuous parameters of register and resonance, and the sex and age classifications are only a rough approximation to a full identification of individual voices. As a matter of fact, each voice shows—in different ways—particular mixtures of individual paraphonic characteristics, together with more or less remarkable idiophonic, social, and geographical features. All of them could be singled out and quantified, and then indicated by means of the appropriate phonetic, prosodic, and paraphonic signs. Of course, the last-mentioned ones are those for pitch, strength, duration, emission, and articulatory and phona
tory qualities, plus—at least—two further ones: brightness, when a voice (not: pronunciation) is distinct and clear (•); or, on the contrary, harsh voice (×), or even ‘falsetto’, or false voice (‡); and, lastly, nasal voice (−). So, a few voices, although located nearby in the diagram, may still be different enough, because they have—or lack—(more or less frequently) certain paraphonic features.

Some illustrative examples—mostly singing in English—are shown in fig 14.b-c. They have been chosen among (rather) well-known entertainment people, whose actual voices can be heard quite easily on the radio and from recordings practically all over the world, although most of them are no longer performing, or living.

Let us simply add that the paraphonic symbol for singing is (⊥) (cf § 11.20).