More about Natural Vowels

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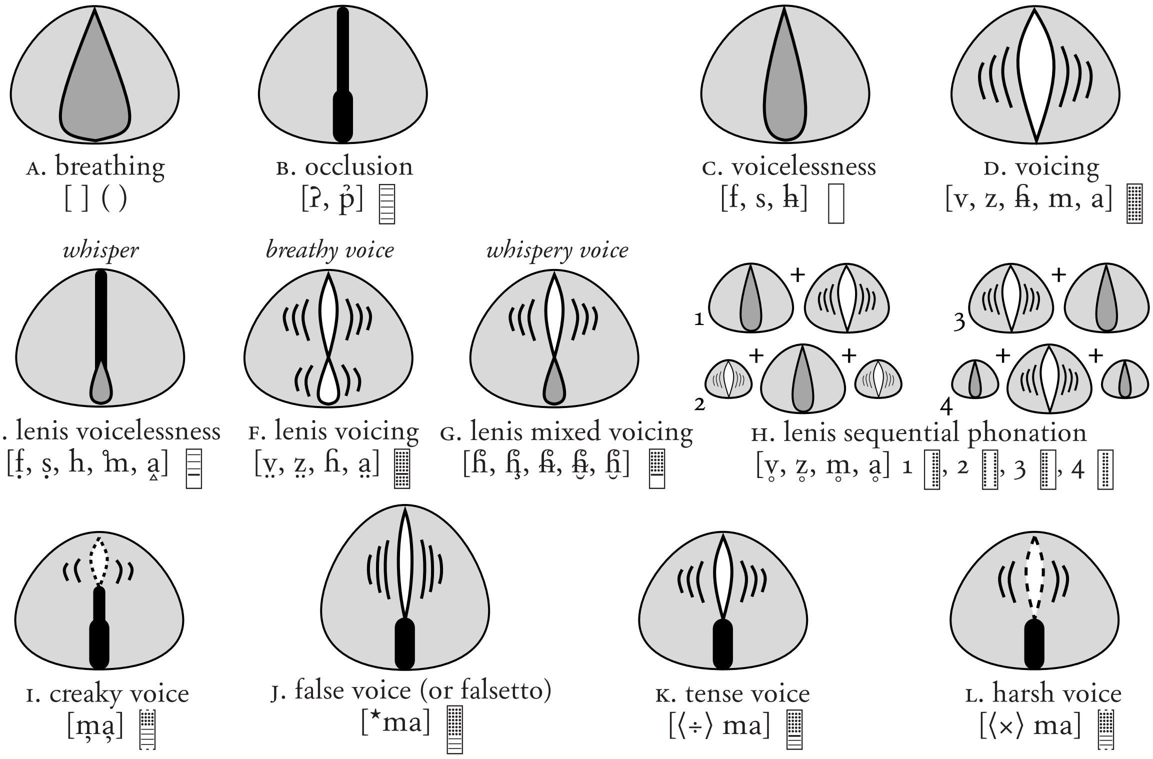
In addition to what is said and shown in *The difference between 'cardinal' and 'natural' vowels (or vocoids)*, we are going to present (& show by means of *canIPA symbols* and *orograms*) a number of different possibilities, which certain languages can use more or less systematically.

Usually, vowels (and vocoids) are voiced. But they can also involve different states of the glottis (*cf fig* 1). *Devoicing* is rather frequent, in certain contexts, either as *partial* or *total* voicelessness.

fig 1. The glottis.



In French: *sur place* [sʏʀ̥ˈpl̥ʌs], *le prix* [lɵˈpʁ̥i], *monsieur* [mɵˈsj̊ø], *merci* [mɛʀ̥ˈsi̭], *tant pis* [tɑ̃ˈpi̭], *putois* [pŷˈtw̥ʌ], *acoustique* [ˌʌkʉ̂sˈţic], *partout* [pɐʀ̥ˈtʉ̂], as well as the colorful *oui!* [ˈwi, ˈwi̥, ˈwi̥h̯].

In Japanese: *sụtòresụ* [̤sɰ̂̃·tʊ_ɿɛ̣sɰ̂̃˲, .stʊ_ɿɛs˲], *watashị* [.ɰɐ-tɐ·ɕ̂i̭˲, .ɐ-tɐ·ɕ̂i̭˲, -ɰɐ·ɕ̂i̭˲], *watakụshị* [.ɰɐ-tɐ·kɰ̂̃·ɕ̂i, -·ɕ̂i̭˲], *uekị* [.ɰ̃-ᴇ·ci̭˲], *shịkakù* [.ɕ̂i̭-kɐ·kɰ̂̃˲], *kàzokụ* [·kɐ_zʊ.kɰ̂̃˲].

In Italian, there is a real problem in uttering certain mainly non-native consonant clusters, also word-final consonants (either simple or in clusters). The more obtrusive realization produces a fully voiced [ə]. As something less unsuitable, we can more typically have a voiced lenis [ə̤]. Also possible is its sequential lenis coun-

terpart [ə̥] (*cf fig* 1: H 1-4, which also shows three possible kinds of peculiar voices: J-K-L, at the bottom of *fig* 1, usually for paraphonic purposes).

An even less obtrusive variant is its fully voiceless lenis counterpart [ə̭], more systematically occurring after voiceless consonants. However, even this version is felt, mainly by foreigners who use peculiar clusters, as not completely good, mostly because it may be a syllabic nucleus, even if it lacks any kind of real voice. Frankly, [ə̭] is a little different from a simple [h], a true contoid (*fig* 1: E). If we whisper Italian *patata* /pa'tata/, we have [ṗa̭'ṭa̭ːṭa̭], with [a̭] as syllable nuclei, even stressed ['ṭa̭ː], while the contoids are simply a little weaker than [p, t].

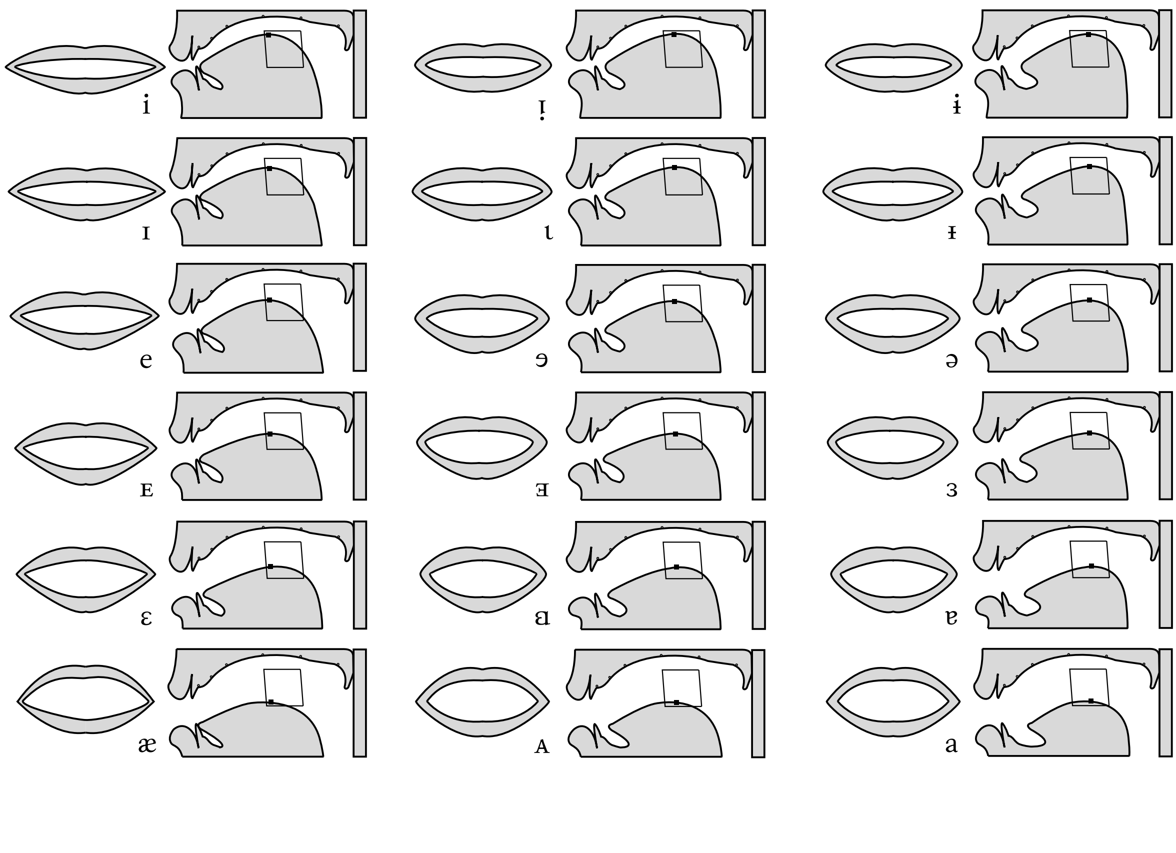
Examples: *stop* [s'tɔpːpə̭, -ə̥, -ə̤, -ə], *James* ['ʤɛimːsə̭, -ə̥, -ə̤, -ə], *James Bond* [ˌʤeimsə̭-'bɔnːdə̭, -ə̥, -ə̤, -ə, ˌʤeimə̭s'b-, -mə̥s-, -mə̤z-, -məz-].

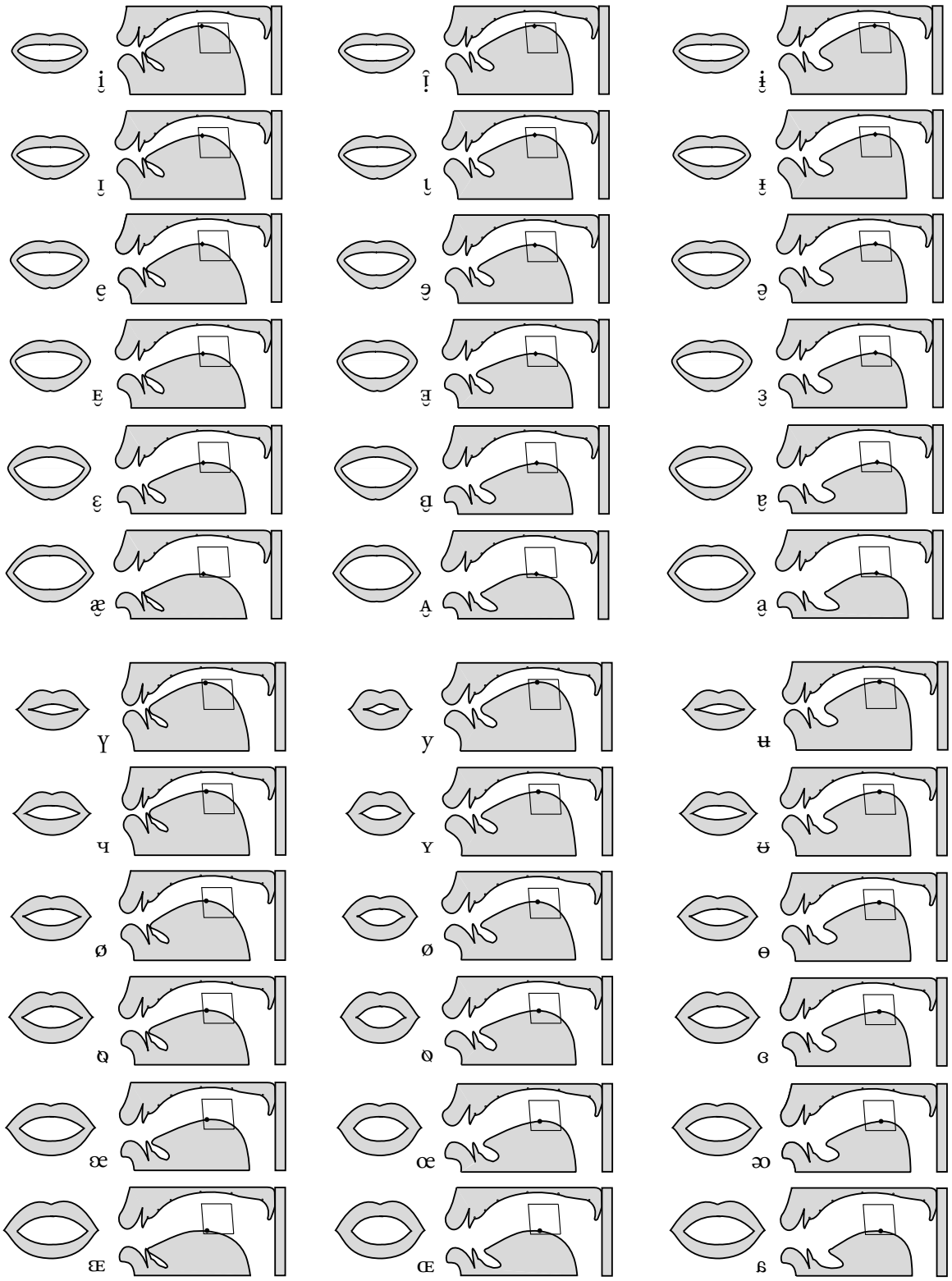
fig 1 also shows *creaky voice* (I), often used in tone languages, even for possible phonemic distinction between tonemes. Chinese: *Nǐ shénme shíhou qù Luómǎ?* /¿ˏni ˀʂɤn◦mɤˀʂɯ◦ɧou, ¿\tsɧy ˀlwɔˏma./ [¿̤ṇi̤ˀʂɜm·mʁ ˀʂɯ̤·ɧoʊ· ¿\tɕɦẏ·lwɔˏmạạ̇.] {you which? time go Rome} (When are you going to Rome?); *Nà gūniang, jiùsuàn bù héshàn wǒ yě huì ài tā.* /\na¯ku◦njaɴ,| ¯tsjou\swan◦puˀɧɤ\ʂan;‖ ˏwɔˏjᴇ\ɧwᴇi, \ʔaᴇ¯tɧa./ [\̤nạ¯ḳu·ṇjaɴ·| ˙ʥ̊joʊ\swạm̩·bu ˙ɹɤ\ʂạṇ̇‖ ʼwɔ̤jᴇ̤\ɬwẹɪ̤· \ʔạᴇ̤̣thạ̇.] {that girl even-if not good I also can love she} (Even if that girl were not good, I would love her nonetheless).

From the articulatory point of view, different kinds of coarticulations are often added, either for phonetic or even phonemic purposes. An intermediate degree of lip rounding (semi-rounding), between spread and rounded shapes, is shown in *fig* 2.

Such lip positions may be used taxophonically, by assimilation to peculiar phones,

fig 2. Different lip shapes.

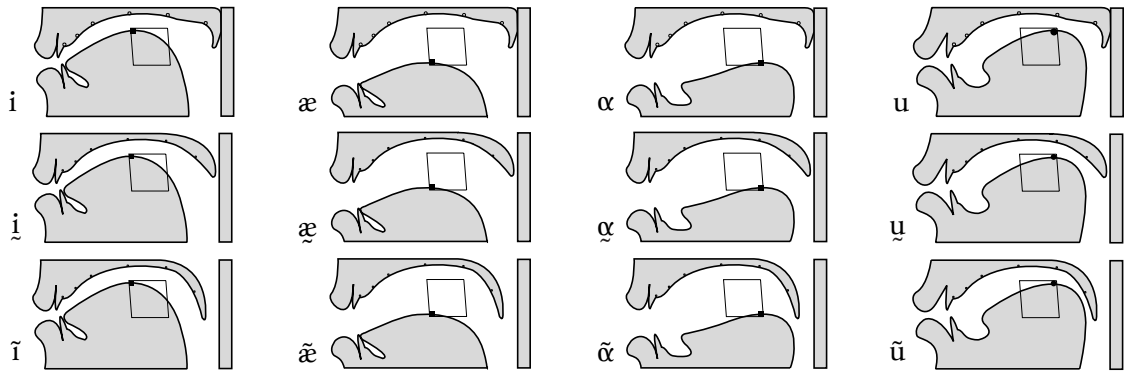




or they may be typical of particular languages or accents. For instance, Japanese *u* /ɯ/ is [ɯ̟], different from Chinese *ï* /ɯ/ [ɯ] (none of which is [ɯ̹], that is *offIPA* '[ɯ]').

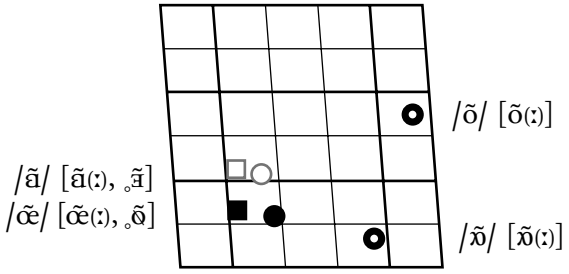
Another frequent coarticulation for vocoids concerns degrees of *nasalization*. *fig* 3 shows the commonest ones applied to the four extreme vocogram points.

fig 3. Degrees of nasalization.



Neutral French has typically four nasalized vowel phonemes (*fig* 4). Southern French accents typically realize them as [V̰ᴺ, Vᴺ] (with different timbres and seminasal contoids). Many Northern Italian dialects and accents have /VN#, VN#/ [V̰ᴺ, V̰N, Ṽᴺ, ṼN].

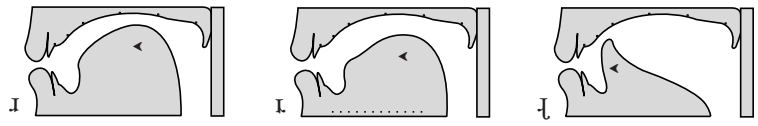
fig 4. The four nasalized vowels of neutral French (stressed and unstressed).



Portuguese (either Lusitanian or Brasilian) is still too often described as having nasalized 'phonemic' vowels. Actually, it has normal /VN#, VN#/ sequences typically realized as [ṼN#, ṼN#] (also for foreign language vowels even 'other' than those declared to be 'phonemic nasal vowels').

Even nowadays, also native-speaker 'phoneticians' are still describing American or South-western British English as having what they call 'retroflexed' vowels, not only for words like *further*, but also for *car*, *port*, *near*, *fair*, *cure*. To be true, such vowels are simply their normal vocoids mainly followed by [ɹ, ɻ] (*fig* 5: postalveolarized prevelar half-rounded approximant and semi-approximant, not true postalveolar approximants, absurdly called 'retroflex(ed) fricatives', that is the postalveolar half-rounded approximant, [ɻ], typical of neutral British English). For *further*, even intense [ɻ̈(ː), ɻ̈(ː)], with no vocoid, are also used, especially in official accents (although variant contoids may be used, in other accents).

fig 5. Two American English /ɹ/ realizations and the British one.



Moving on to further coarticulations for vowels, we can certainly present the Mandarin Chinese phonemic series of laterally contracted vocoids, shown in *fig 6* (with the addition of broad Pekin(g)ese [i̪]).

fig 6. Érhuà laterally contracted Chinese vowels.

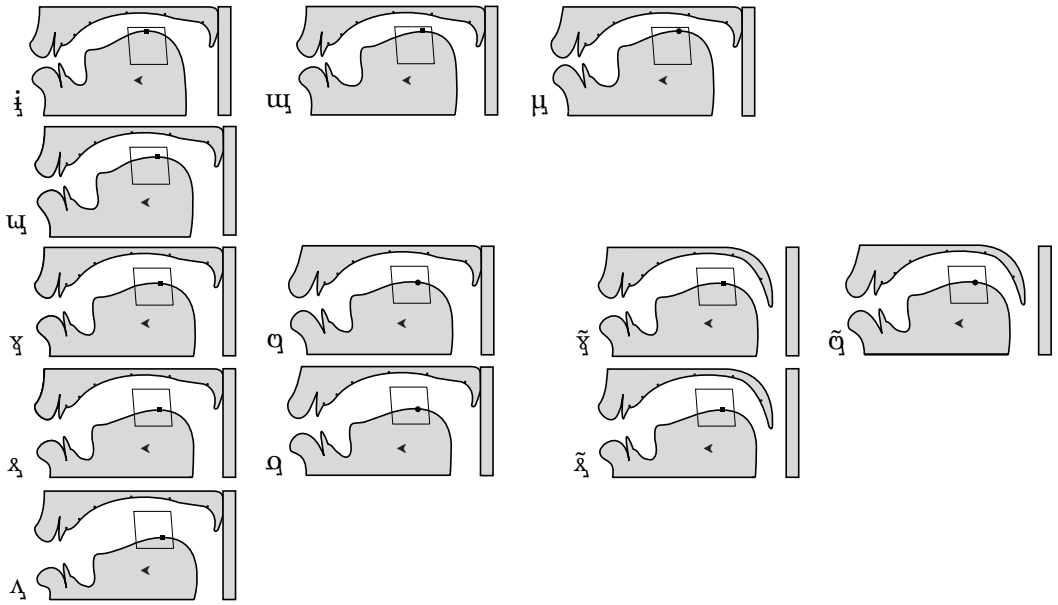


fig 7.1. Possible unrounded uvulo-pharyngealized Arabic vocoids.

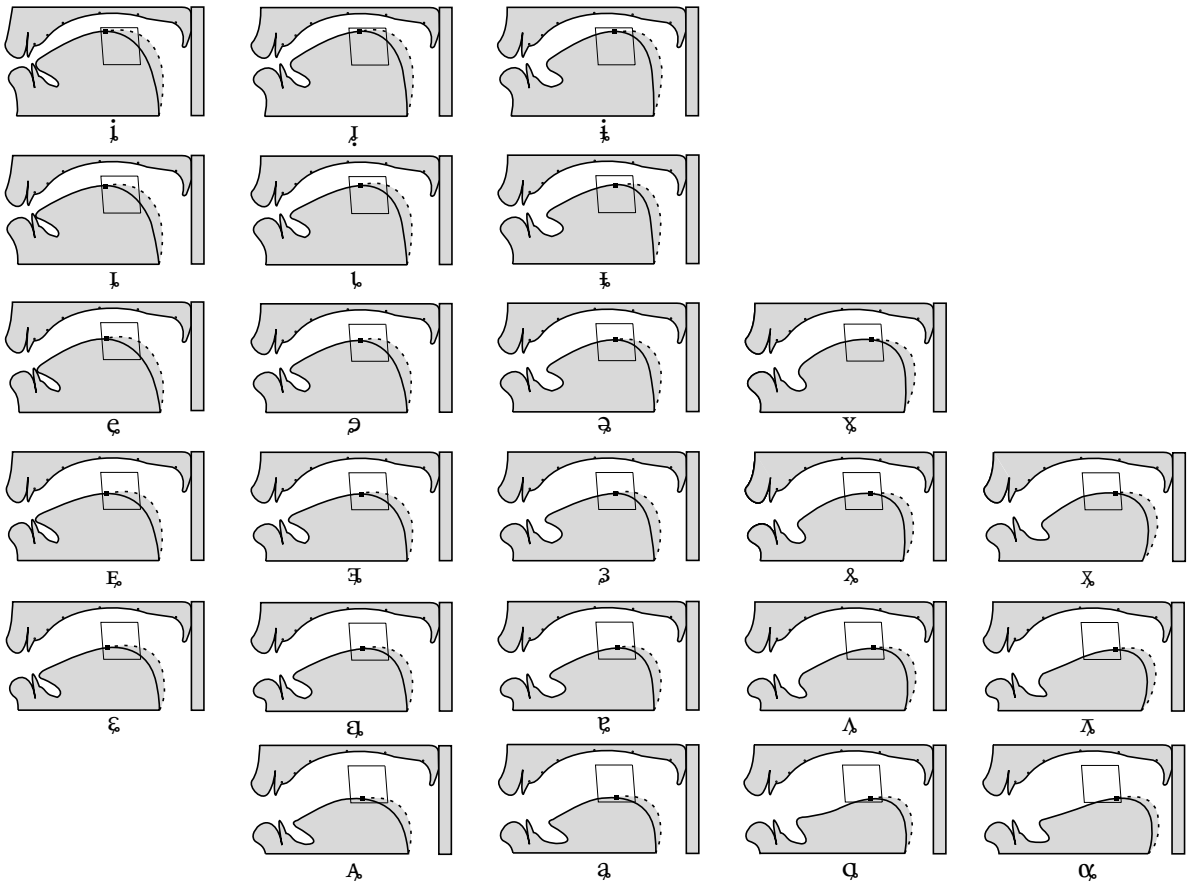


fig 7.1-3 show the uvulo-pharyngealized vocoids used in some accents of Arabic. In addition, *fig* 8 illustrates possible different degrees of 'darkness' used for Arabic /a/.

fig 7.2. Possible half-rounded uvulo-pharyngealized Arabic vocoids.

fig 7.3. Possible rounded uvulo-pharyngealized Arabic vocoids.

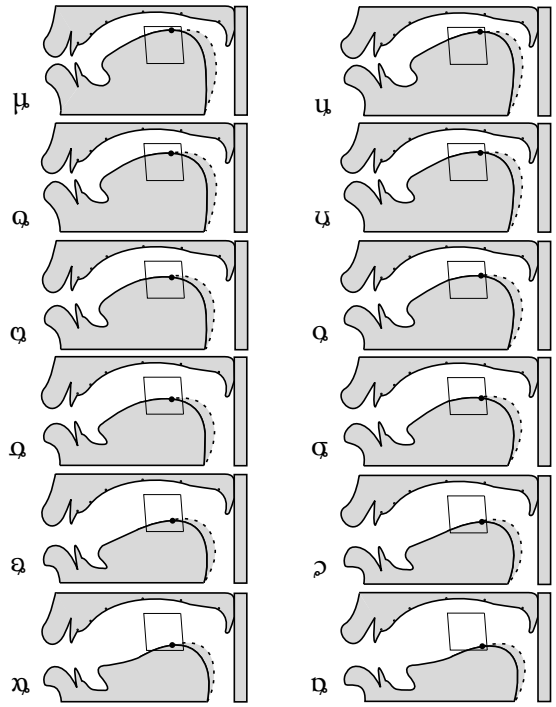
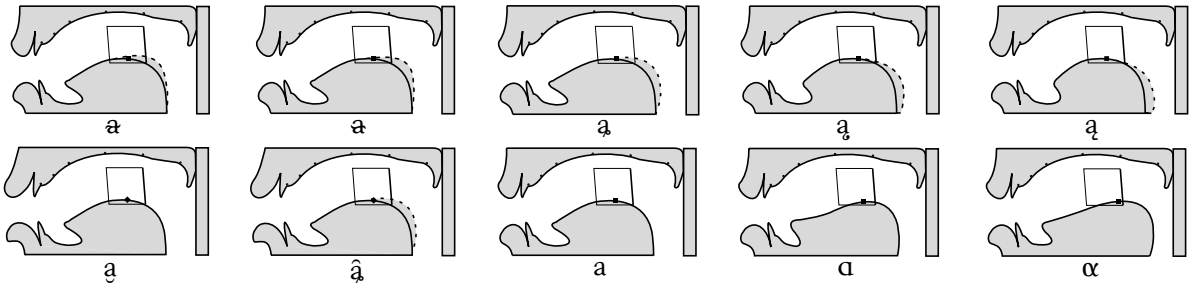
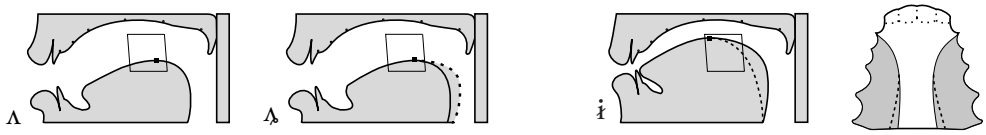


fig 8. Degrees of 'darkening' for Arabic /a/.



For German final unstressed *-er* /ɹ̩/ (//əʁ//) [ʌ, ɹ̩, ʁ̩, ʁ̩], we can also have the uvulo-pharyngealized vocoid [ʌ̹] (*fig* 9 also shows the orogram and palatogram of /i(ː)/ [ɨ(ˑɨ)], of a broad Berlin accent, compared with neutral [i(ː)]).

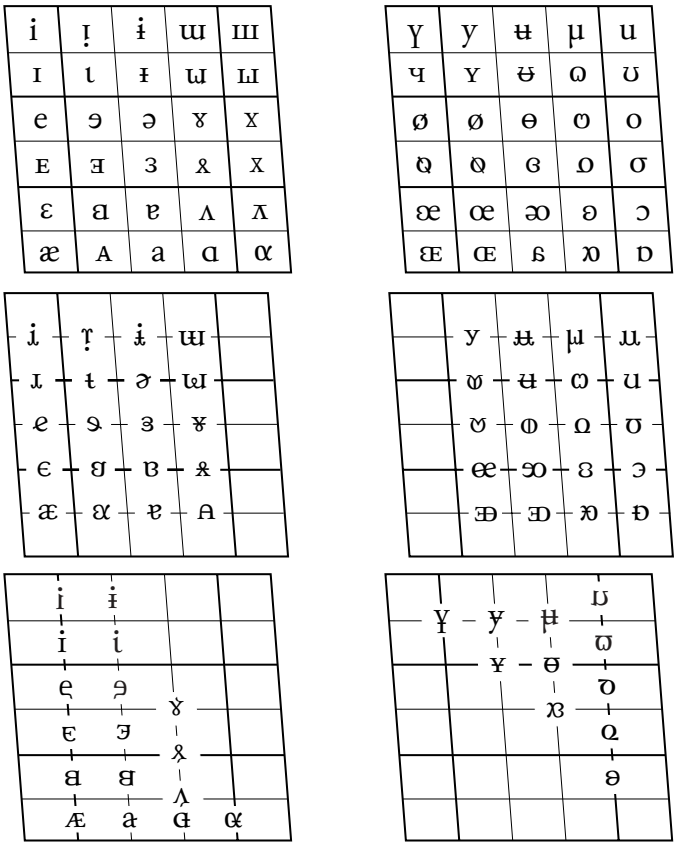
fig 9. German *-er* and Berlin /iː/.



For greater precision in accurate descriptions (and comparisons between accents, obviously), we can use further special symbols (shown in vocograms added in *fig* 10), instead of using (more) cumbersome diacritics with current symbols.

All the symbols for vocoids seen above, in addition to being put on vocograms,

fig 10. *canIPA* vocoids and possible intermediate realizations.



can produce peculiar paraphonic effects for certain regional accents, by means of particular modifications of normal vocograms. For instance, in some typical Castilian Spanish accents of central Spain, including Madrid, we generally find what is shown in *fig* 11 (in addition to its neutral vocogram).

fig 11. Castilian peculiar vocoids (with paraphonic settings).

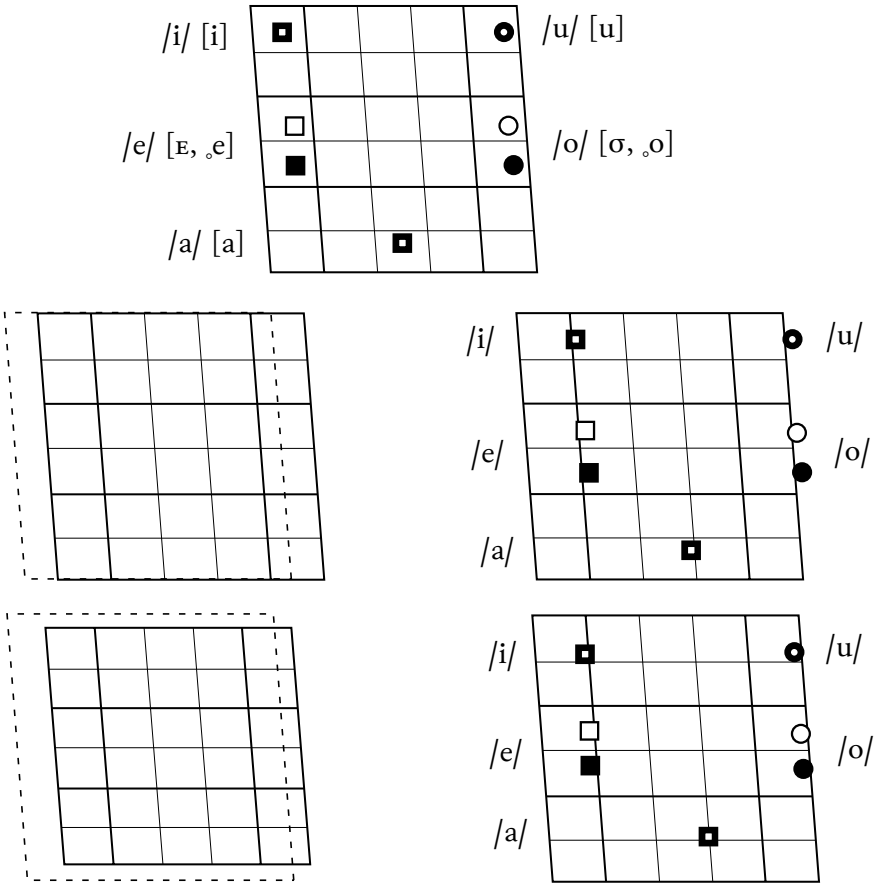
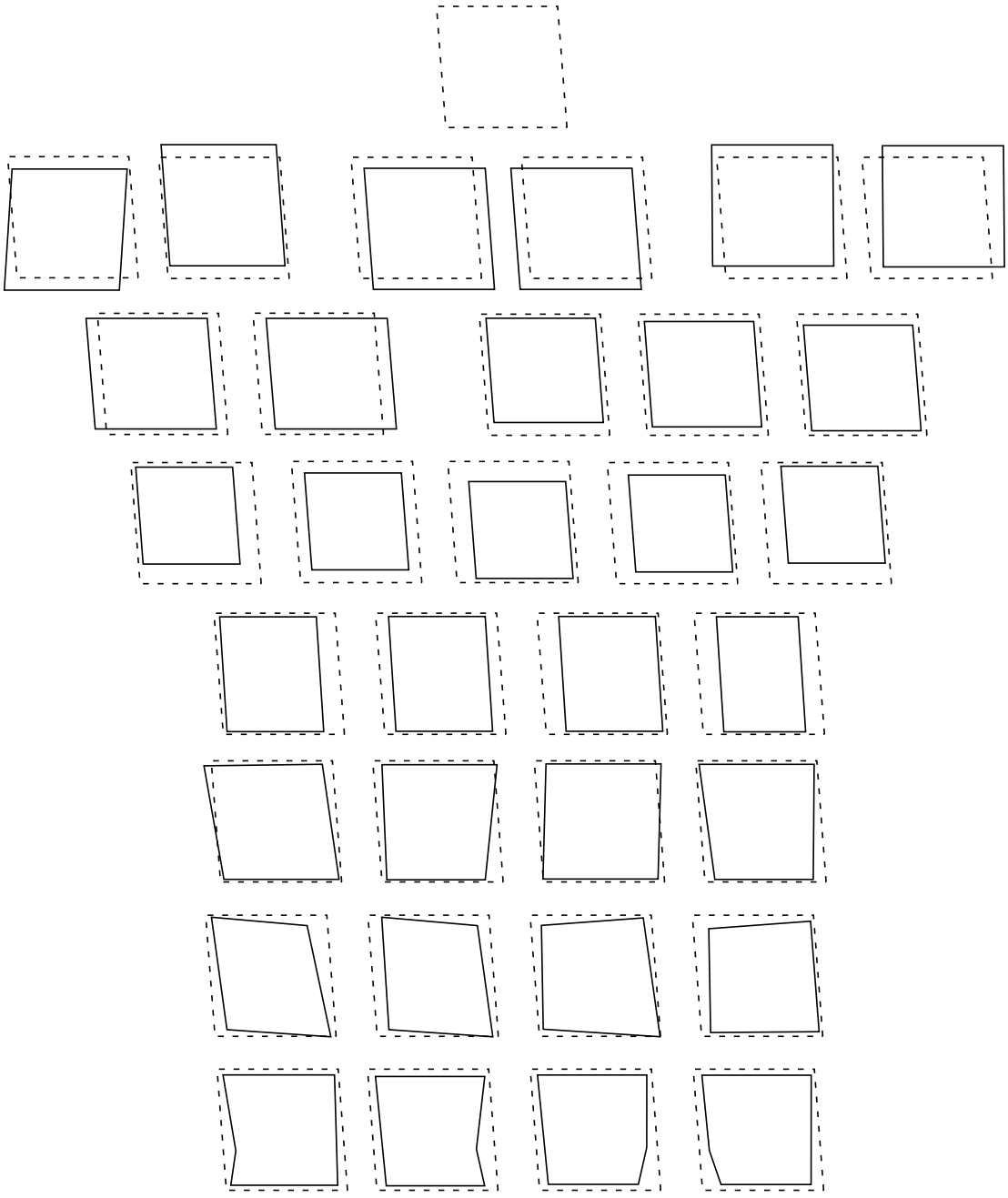


fig 12 shows 32 modifications, which are part of many regional accents in several languages. Such modifications can be quite numerous, in different languages and their accents. The vocograms are shown at a reduced size, with dotted lines indicating the basic, unalterd vowel space). They are just a sample of what can be found all over the world, as modifications of what may be presented as typical accents.

Let us now discuss onnections between vocoids and approximants (in different ways). It is interesting to note that, in current and spontaneous speech, in Italian, Spanish, and Portuguese, for instance, words ending in vowels or diphthongs and followed by other words beginning likewise, withing rhythm and semantic groups (with or without inserted continuative tunes), currently change their last vocalic element into an approximant, or semi-approximants, or drop it entirely.

Italian: *arduo impegno* [ˈarduoim ˈpeɲːɲɔ, -dwoim-, -dwɯim-, -dwim-],
Spanish: *arduo empeño* [ˈarðwoem ˈpɛˑɲo, -ðwɯem-, -ðwem-, -ðɯem-],
Portoguese: *árduo empenho* [ˈarðwuẽm ˈpeˑɲu, -ðwɯ̃ẽm̥-, -ðwẽm̥-, -ðẽm̥-].

fig 12. Frequent paraphonic modifications of the vocogram.



In order to delve deeper into what we have presented here concisely (and further subjects and languages, as well), our Natural Phonetics books are recommended. For the languages mentioned in this paper: *Arabic Pronunciation & Accents*, *Chinese P & A*, *English P & A*, *French P & A*, *German P & A*, *Italian P & A*, *Portuguese P & A*, *Spanish P & A*.