

- **What is articulatory description?**

*Articulatory description is always the second question on The IPA Certificate exam paper and is the popular name given to the description of the movements of **all** the speech organs involved in the production of a given utterance.*

*The purpose is to demonstrate an understanding of coarticulation – the way in which each one of the speech organs moves in concert during the production of speech. Each organ has a part to play at any one time, even if it is a passive role, and that must be clear from the narrative account.*

*The account is effectively a movie film of the organs but put into words!*

*There is also a well-established convention for writing such a description, but before detailing this, I will first list the organs which need to be tracked throughout. Starting from the lips and moving into the vocal tract, you will need to account for the contribution made by:*

1. Lips
2. (Lower) jaw
3. Parts of the tongue:
  - a. tip
  - b. blade
  - c. front
  - d. centre
  - e. back
  - f. side rims
  - g. (root)
4. Velum
5. Vocal folds

*At any one point in time, it should be clear exactly where each of these organs is and, if it is in motion, what it is doing.*

- **How to structure the narrative**

*Your narrative needs to follow a particular structure.*

- Parametric diagram & narrow transcription

*Every description must begin with a parametric diagram showing vocal-fold and velum action of the sort given below. It is recommended that you **only** include these two action lines because once you start to add more, the diagram becomes more difficult to read and – in spite of how good you are – you become increasingly likely to make errors. The whole point of the diagram is to **help** (both the reader, and you – the author of the account).*

*The columns of the diagram (each represents one segment in the broad phonetic sense) are headed up with the detailed narrow transcription of the utterance. The example below is quite a simple one, but you can see how diacritics are used to show the spread – coarticulation – of features across*

segments. The initial vowel sound is nasalized because the speaker is anticipating the following nasal consonant [m] and therefore does not close the velum. Correspondingly, the velum action line remains in the open position for most of the first two segments. Later, the narrow transcription shows inverted-r with a devoicing diacritic added. This reflects the postalveolar articulation of Modern RP (MRP) [ɹ̥] and the fact that the vocal folds remain open after the release of [p] (which is followed by a long Voice Onset Time when it occurs initially in a stressed syllable). The vocal fold action line shows that voicing begins just before articulation of the following vowel sound, and immediately above the onset of vibrations (represented by the zig-zag line here) and small superscript representation of [ɹ̥] is included to show this – most of the segment is devoiced, but at the very last moment, the vocal folds come together and start to vibrate for normal voice.

You should also note in this diagram:

- There is a boundary marking the beginning of the first segment and another marking the end of the last one.
- The action lines extend beyond the marginal boundaries of the first and last segments. This is because the organs represented by the lines exist outside of speech – they are there before speech begins and they continue to be there when we have finished speaking.
- The action lines are labelled and a key is provided to show the reader how to interpret them.

#### ○ Other diagrams

Two other diagrams are essential to a well-written account (you will lose marks if you do not include them): a vowel diagram and at least one vocal tract diagram. Both require a title and both must be adequately labelled.

The word in the example below has two vowels. You will see that both are plotted on a single vowel diagram entitled Vowel diagram showing the resonances of [ɪ] and [e]. The two vowels are clearly identified and the vowel space is labelled using the primary Cardinal Vowels.

As far as the vocal tract diagram is concerned, it is recommended that you choose one which will reflect interesting features of the utterance. Here, for example, I have chosen to show the hold-phase of the plosive [p] showing anticipatory lingual coarticulation of [ɹ̥] (the tongue preparing to articulate the postalveolar segment before the plosive release takes place). The diagram has an explanatory title and the relevant articulators and gestures are clearly labelled.

Always remember to refer the reader to your diagrams at appropriate points in the narrative.

#### ○ The opening statement

Before speaking, the speaker is assumed to be in what is called the rest position and every account should begin with a statement of this. The following paragraph is typical and you are welcome to learn it and reproduce it if you wish:

Before the utterance begins, the speaker is in the rest position with the jaw lightly clenched, the tongue relaxed and filling most of the

oral cavity (the tip down behind the lower front teeth), the velum in the open position and the glottis open enabling normal quiet breathing. In anticipation of speech, the speaker inhales, filling the lungs with air. The utterance will be produced on a pulmonic egressive airstream.

*The first articulatory movements the speaker will make get him/her from this rest position to the articulatory position of the first sound. In the case of the example below, this is going to be a nasalized vowel, produced, as the vowel diagram suggests, with a part of the tongue nearer to centre than front rising just above the half-close/close-mid height. This gesture will be described, as will the opening of the jaw to an aperture between narrow and medium and the simultaneous parting of the lips which assume a fairly neutral position. All this happens before the vocal-folds come together and **controlled expulsion of lung air begins**... You must remember to set the airstream in motion – without it, there will be nothing for the listener to hear! This moving column of air will also cause the vocal folds to vibrate for normal voice.*

- The remainder of the description

*Having set everything up, you will then need to follow the movements of each articulator, in parallel, through the utterance. At the end, you must return the speaker to the rest position.*

- Style and terminology

#### Active verb forms

*As you read the fair copy below, you will notice that all the verbs are active. This is an essential feature of an articulatory description. Passive verb forms are ambiguous, but active verb forms are not. An expression such as “the velum is raised” is unclear, meaning either the velum is already in a raised position or the velum is in the act of being raised by something. In an articulatory description, we need to **see** the movement taking place: the velum rises... This is true of every single movement and gesture throughout the utterance – always use active verb forms.*

#### Time expressions

*Include expressions that indicate the passage of time, expressions such as: simultaneously, at the same time, after a short interval, immediately, after a period (e.g. of nasalized vocalic resonance, etc.), and so forth.*

#### Useful technical terminology

*Certain groups of terms are appropriate for the description of certain articulators – try not to mix these up. Some useful groups include:*

- ✓ *Tongue terminology – Tip, blade, front, centre, back, side-rims (and you can customize this for part between front and centre, part nearer to centre than back, etc.)*
- ✓ *Vowel terminology – referring:*
  - a) *to the approximate location of the active part of the tongue in the vowel space) – front, central, back*

b) to the height to which the active part rises – high/close (and please note this term is close meaning “near to”, rather than closed meaning “shut”), half-close/close-mid, mid, half-open/open-mid, low/open (and again, this is modified as required: mid-way between half-open and fully open for example)

- *Lip-position terminology* – closed, (slightly, strongly) spread, neutral, (slightly, strongly) rounded, also open rounding, tight rounding, (slight, strong) protrusion
- *Jaw-position terminology* – apertures are described as wide, medium, narrow and again, these are modified to suit (fairly wide, between narrow and medium, very narrow, etc.)

Auditory effects

Throughout the account, you also need to describe the auditory effect of a particular gesture: silence, audible friction, audible plosion, an interval of vocalic resonance...

And when referring to vocalic resonance, remember to cross-refer this to your vowel diagram: an interval of vocalic resonance [give symbol] as shown on the accompanying vowel diagram.

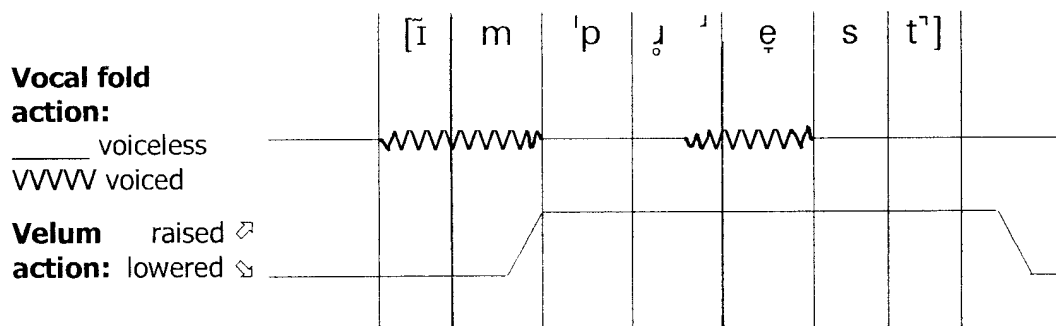
• **An example**

What follows is essentially a fair-copy, accompanied by a commentary which will point out relevant features of the description that you will need to be sure to take into account when you write your own articulatory descriptions.

**Narrative account - fair copy**

**Commentary** – NOTE: You do not write a commentary yourself; this simply offers explanations relating to the narrative account which are intended to assist private study.

Articulatory description of the word *impressed* /ɪm'prest/ realised as [ ɪ̃m'pɹ̥ɛst̚ ].



◀ Note that all accounts begin with a detailed narrow transcription and a parametric diagram showing vocal fold and velum action.

Before the utterance begins, the articulators are in the rest position: the jaw is lightly clenched, the lips closed, the tongue fills most of the oral cavity, the velum is down and the glottis open for

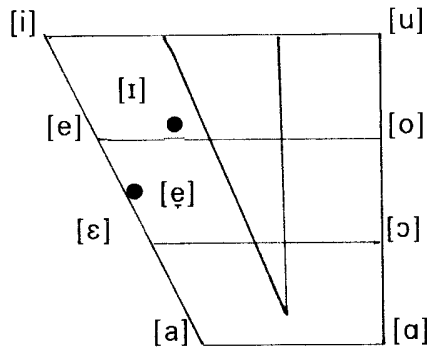
◀ This paragraph, describing the rest position, begins all articulatory descriptions and must come immediately after

normal breathing. The utterance will be produced on a pulmonic egressive airstream.

In anticipation of the forthcoming [m] sound, the velum remains in the open position. Simultaneously, the jaw opens to a narrow aperture, the lips part and assume a fairly neutral position and part of the tongue nearer to the centre than the front rises to a height just above half-close below the hard palate. This becomes the highest point of the tongue. The side rims rise and make light contact with the edges of the upper molars. The tongue tip remains low, behind the lower front teeth and the back remains low.

The controlled expulsion of lung air begins and at the same time the vocal folds come together and start to vibrate for normal voice. Air flows simultaneously through the oral and nasal cavities, adding a nasalized resonance to this centralized-front half-close unrounded vowel, [ɪ̃]. The resonance is shown on the accompanying vowel diagram. The vowel is short in duration in this unstressed position.

**Vowel diagram showing resonances of [ɪ̃] and [ɛ̃]**



After a short interval of this nasalized vocalic resonance, the lips close. Air now flows only through the nasal cavities and a voiced bilabial nasal is heard.

After an appropriate interval of bilabial nasal resonance, the velum rises and forms velic closure. (It will remain in this position throughout the rest of the utterance.) Simultaneously, the vocal folds open and cease to vibrate. The egressive pulmonic air continues to flow into the oral cavity where it is trapped and where air-pressure builds up. There is momentary silence.

During this silent interval of compression the tongue tip rises and assumes a position of wide approximation to the back of the alveolar ridge. The rear rims retain their previous contact with the upper molars and the body of the tongue assumes a concave posture with the front lower than the back. (See diagram below.)

After a silent interval of compression the lips part and assume a rounded position. Audible plosion is heard as the articulators first separate followed by an interval of voiceless postalveolar friction as the compressed air is released.

*the parametric diagram. Memorize it for use in the exam.*

◀ *Preparation for speech describes all movements of the articulators away from the rest position and into the positions required for the initial sound. (Note anticipatory coarticulation of nasality here, looking ahead to [m].)*

◀ *Always remember to set the air-stream moving.*

◀ *Description of the auditory effect is always included plus cross-reference to any relevant diagram.*

◀ *One vowel diagram will do for all the vowels in the utterance – but make sure that they are properly identified.*

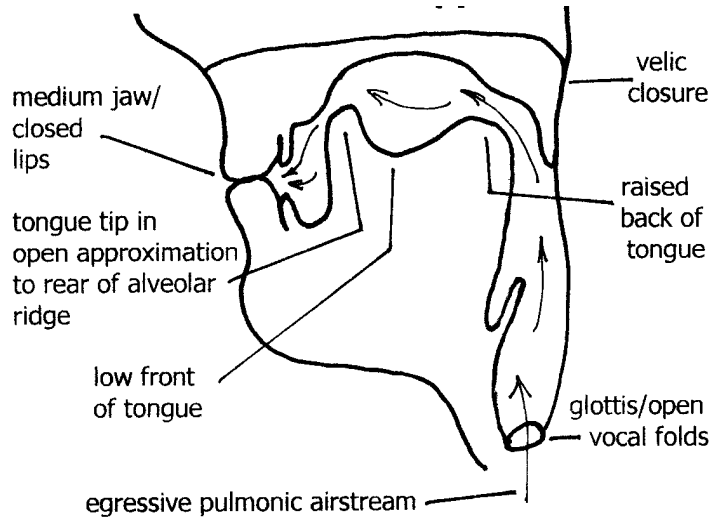
◀ *Phrases are included which indicate the passing of time.*

◀ *A change in the auditory effect is described.*

◀ *Anticipatory lingual coarticulation here as [ɹ] is prepared during the hold-phase of the plosive [p]. This is illustrated in the following vocal tract diagram.*

◀ *Auditory effect again. (Note that “plosion” is the auditory effect of the articulators separating and **not** the effect of any following rush of air.)*

**Vocal tract diagram showing the hold-phase of [p] with anticipatory lingual coarticulation of [ɹ]**



After an appreciable interval of voiceless friction, the vocal folds come together and start to vibrate again for normal voice. With the reduction in air-flow, audible friction ceases and a voiced postalveolar approximant resonance is heard briefly as the jaw begins a small opening movement to a medium aperture.

Immediately, the back of the tongue and the tip lower (the latter assuming a position behind the lower front teeth again) and the front rises to mid height to become the highest point of the tongue. The side rims lower slightly, losing their contact with the upper molars. The lips move to a slightly spread position and a mid, front, unrounded vowel resonance is heard, [ɛ], as shown on the accompanying vowel diagram. Although the syllable is stressed, the duration of this vowel is relatively short, partly because of pre-fortis clipping (the syllable is closed by the fortis consonants [-st]).

Following this short interval of vocalic resonance, the tongue tip and blade rise again to lightly contact the alveolar ridge while the side rims resume contact with the upper molars. The body of the tongue assumes a narrow, shallow, median groove which is responsible for a tiny opening at the centre of the alveolar contact. Air is forced through this tiny channel, becoming turbulent and passing in a jet-like stream through between the tongue and the alveolar ridge before hitting the back of the lower front teeth as it leaves the vocal tract. Simultaneously, the jaw aperture becomes narrow and the vocal folds open and cease to vibrate. The resultant sound has a noisy sibilant friction quality.

Audible friction terminates when the depressed median line of the tongue rises and brings about complete closure at the alveolar ridge, terminating the passage of air.

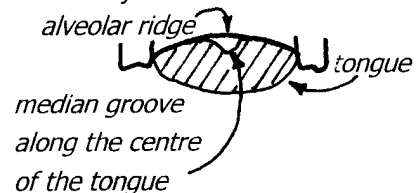
A brief silent interval of compression follows before the lips close,

◀ You really only need to draw one vocal tract diagram, but make sure it is well-chosen (that is, a diagram that can include lots of interesting detail, as here) and that it is fully labelled (that is, that it includes all the labels needed to depict the features that epitomise the sound in question).

◀ Another change in auditory effect.

◀ A full articulatory account of the vowel gesture but also a cross-reference to the resonance plotted on the earlier vowel diagram.

◀ Grooving of [s] – this could even have a little diagram added if you like:



◀ Auditory effect again.

**Note throughout the use of ACTIVE VERB FORMS. Passive verb forms are ambiguous in English and because of this they must be**

the velum opens and all the articulators relax as the speaker returns to the rest position and resumes normal breathing. The compressed air dissipates inaudibly through the system; the final [t]-sound has no audible release.

***avoided in articulatory descriptions.***

*◀ Finally, remember to return the speaker to the rest position at the end.*

- **Further reading and practice**

*There is very little academic literature describing this skill. However, a recent textbook – Ashby, P. 2011, **Understanding Phonetics**. Cambridge: CUP – teaches this skill and offers a chapter-by-chapter opportunity to write a description, providing an indicative fair-copy and comments.*

[March 2014]