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Phonetics and the Teaching of Pronunciation: A Systemic Description of English Phonology

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Editorial Notes

Observing that before one can teach anything, it is necessary to know what one is to teach, J. C. Catford begins "Phonetics and the Teaching of Pronunciation" with a description of the sound system of English. His presentation of English phonology is a systemic one that derives from the systemic linguistics associated with the British linguist M. A. K. Halliday. This system is formulated in a four-rank hierarchy of units, with every unit at one rank consisting of one or more units of the rank below it. He emphasizes the point that for the teaching of pronunciation it is important to think of English phonology as a series, a hierarchy of units of different kinds, not merely as a collection of sound segments whose pronunciation must be learned so that they can be strung together with stresses and intonations superimposed on them. The four units are: (a) *tone group*, (b) *foot*, (c) *syllable*, and (d) *phoneme*.

Catford then turns to a discussion of three distinct types of process in pronunciation instruction: selection, arrangement, and presentation of materials to be taught. In the section on selection Catford suggests that two principles—*frequency of occurrence* and *functional load*—be followed in selecting particular sounds for teaching. In Catford's terms frequency of occurrence is the number of times a sound occurs per thousand words in text. (Voiced *th* is the highest frequency sound in English.) Functional load refers to the number of words in the lexicon in which the sound occurs, or in the case of a contrast, the number of pairs of words that it serves to keep distinct. (/i/ɪ/ has a high functional load in English, while /u/ʊ/ has a low functional load.)

In the section on arrangement Catford suggests the following sequencing of pronunciation points for instruction: (a) basic rhythm and intonation patterns; (b) syllable openings and closings, specifically syllable-initial consonants, syllable-final consonants, and consonant clusters; (c) open transition between consonants, usually regarded as a short unstressed vowel as illustrated by the first word of these pairs: *terrain/train*, *parade/prayed*, *scallop/scalp*, *chorus/course*: and (4) vowels and diphthongs (i.e., the syllabic nuclei).

Finally, Catford focuses on presentation and outlines five principles: (a) precise descriptions; (b) concentration on teaching basics, not symptoms; (c) introspection and silent practice; (d) utilization of all sounds known to the student, that is, capitalizing on the articulation possibilities available to students from their own languages; and (e) imitation and slowed-down speech. The material presented in these five sections of presentation contains a wealth of examples and a number of carefully described teaching techniques.

Catford concludes with the comment that using phonetics in teaching pronunciation means to many only a narrow concept of using phonetic transcription. In fact, according to Catford, it really means using *applied phonetics*—the information and the skills that the careful study of phonetics can provide.

J. M.

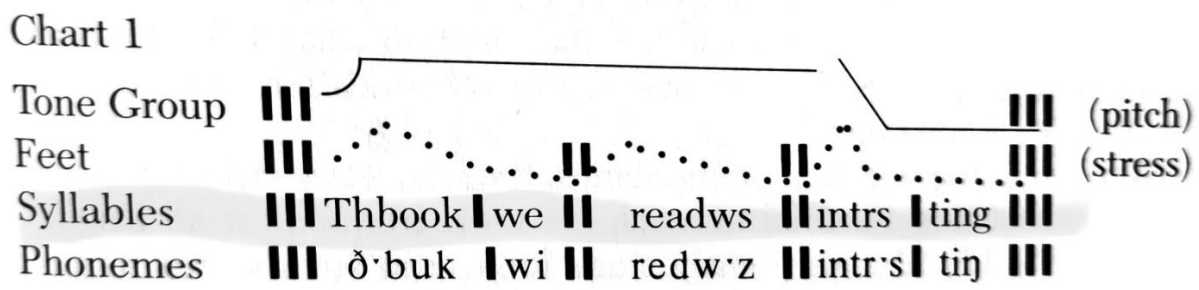
Phonetics and the Teaching of Pronunciation:
A Systemic Description of English Phonology

Before one can teach anything it is necessary to know what one is going to teach! So I begin with a short survey of English pronunciation. There are various ways of describing the sound system of English. One description which I find particularly useful for the organization of pronunciation teaching is a *systemic* description of English phonology derived from the *systemic linguistics* associated with M. A. K. Halliday.

In this description, the sound system of English is regarded as a hierarchy of units at four ranks. It moves from the largest or most inclusive unit, the intonation contour or *tone group*, to the rhythmic unit, or *foot*; to the *syllable*; and finally to the smallest unit, the phonemic unit or *phoneme*. Every unit at one rank consists of one or more units of the rank below it. That is, every tone group consists of one or more foot, every foot of one or more syllable, every syllable of one or more phoneme.

The following is an example of an English sentence with the various ranks in the phonological hierarchy indicated:

The book we read was interesting.



As this simplified example indicates, tone group consists of one continuous intonation contour with a single dynamic (falling) tone. Each foot consists of a single stress impulse, rising quickly to a peak near the beginning of the foot and then falling off more slowly, as indicated by the dotted line representing the quickly rising then falling stress pulse. The syllables are written with some vowels omitted to indicate that *th*, *ws*, and *trs* do not form syllables in themselves. They are better regarded as pseudosyllables tacked onto real syllables and containing *open transitions*. The last rank consists of syllables and of open transitions

between consonants which are represented by [·] (see Catford, 1966, 1985, for further information).

The above account of the phonological hierarchy of English emphasizes an essential point in pronunciation teaching. English phonology is not merely a collection of phonemes whose pronunciation has to be learned and later strung together with superimposed stresses and intonations, but rather a *hierarchy* of units of different kinds, each with its own learning problems.

Selection, Arrangement, and Presentation

Teaching pronunciation involves at least three distinct types of process: selection, arrangement, and presentation of material.

Selection

The first of these processes, selection, is necessary because clearly one cannot teach a whole language in any particular course. This is generally appreciated with respect to vocabulary and grammar, but it is often forgotten in pronunciation teaching. The result may be either a half-hearted attempt to teach every feature of pronunciation, or no attempt is made at all. Pronunciation is regarded as too complex and vast an area.

However, it is perfectly possible to make a deliberate selection of items to be taught. The *principle of frequency* often used in vocabulary selection can also be applied to pronunciation. In the initial stages one might restrict oneself to the most frequent intonation patterns: a simple falling tone starting on the initial syllable of the last foot in a sentence for statements and WH-questions, and a rising tone for YES-NO questions.

Applied to the selection of phonemes, the frequency criterion would indicate that it is essential to teach the most frequent of all English consonants, [ð], at a very early stage for use in such words as *the*, *this*, and *that*.

Another principle that can be applied to the selection of phonological items, particularly phonemes, is *functional load*. The frequency of a phoneme or phonemic opposition is the number of times that it occurs per thousand words in text. On the other hand, the functional load of a phoneme or phonemic contrast is represented by the number of words in which it occurs in the lexicon, or in the case of a phonemic contrast, the number of pairs of words in the lexicon, that it serves to keep distinct. For example, the contrast between the English vowel [i] in *sheep* and [ɪ] in *ship* serves to distinguish many pairs of words (e.g., *peep/pip*, *peat/pit*, *peak/pick*, *peel/pill*, *peach/ pitch*). The opposition [i/ɪ] has a high functional load. In contrast, the opposition [u/ʊ] in *fool/full* distinguishes very few pairs of words and thus has a low functional load.

Table 1 lists the functional loads of a number of English phonemic contrasts: initial consonants, final consonants, and vowels. In each list the highest functional load is represented by 100, and the remainder are represented as percentages of this maximum. I suggest that in a course, with little time for pronunciation teaching (which is often the case), the teacher might want to concentrate on those phonemic oppositions with a high functional load and give less attention to those with a low functional load.

Table 1. *Relative Functional Load*

Initial Consonants	%	Final Consonants	%	Vowels	%
k/h	100	d/z	100	bit/bat	100
p/b	98	d/l	76	beet/bit	95
p/k	92	n/l	75	bought/boat	88
p/t	87	t/d	72	bit/but	85
p/h, s/h	85	d/n	69	bit/bait	80
l/r	83	l/z	66	cat/cot	76
b/d	82	t/k	65	cat/cut	68
t/k, t/s	81	t/z	61	cot/cut	65
d/l	79	l/n	58	caught/curt	64
p/f	77	t/s	57	coat/curt	63
b/w	76	p/t	43	bit/bet	54
d/r	75	p/k	42.5	bet/bait	53
*h/zero	74	m/n	42	bet/bat, coat/coot	51
t/d	73	s/z	38	cat/cart, beet/boot	50
b/g	71	t/tʃ	31	bet/but, bought/boot	50
f/h	69	k/g	29	hit/hurt	49
f/s	64	*t/θ	27	bead/beard	47
n/l	61	k/tʃ	26	pet/pot	45
m/n	59	b/d	24	hard/hide	44
d/g	56	d/g	23	bet/bite, cart/caught	43
ʃ/h	55	v/z,d/dʒ	22	cart/cur	41

s/ʃ ,d/n	53	b/m, g/ŋ	21	boat/bout	40.5
k/g	50	b/g	20	cut/curt	40
g/w	49	n/ŋ	18	cut/cart	38
n/r	41	p/f,s/θ	17	Kay/care	35
t/tʃ, d/dʒ/	39	dʒ/z,m/v	16	cart/cot	31.5
s/tʃ	37	ŋ/l	15	*here/hair, light/lout	30
g/dʒ	31	p/b,m/ŋ	14	*cot/caught	26
b/v	29	g/dʒ	13	fire/fair	25
*w/hw	27	*tʃ/ʃ	12	her/here, buy/boy	24
*ʃ/tʃ	26	*f/v,*f/θ	9	car/cow	23
*f/v	23	*tʃ/dʒ	8	*her/hair	21
*v/w	22	b/v,s/ʃ,z/ð	7	*tire/tower	19
dʒ/dr, s/θ	21	*θ/ð	6	box/books	18
dʒ/y	20.5	*d/ð	5	*paw/pore	15
*d/ð,*tʃ/dʒ	19	*v/ð	1	pill/pull	13.5
*t/θ	18			pull/pole	12
tʃ/tr	16			bid/beard	11
*f/θ	15			bad/beard	10
*f/hw	13			*pin/pen, *put/putt	9
*v/ð	11			bad/Baird	8
*kw/hw	8			*pull/pool	7
d/z	7			*sure/shore, pooh/poor	5
*s/z	6			*cam/calm, purr/poor	4.5
*tw/kw	5			good/gourd	1
*tw/kw	5				
v/z	2				
*θ/ð/, z/ð	1				

A (*) before an entry indicates that the contrast does not occur in at least one dialectal variety of English.

Supposing one wanted to neglect altogether some oppositions which have a very low functional load, how far down these scales should one go before coming to oppositions that might be regarded as dispensible? In other words, what would be a useful cutoff point? The asterisks before certain oppositions provide a clue. All those contrasts marked with an asterisk do not, in fact, exist in at least one variety of English. Thus the opposition [w/hw] as

in *watt/what* is lost in some dialects of English in the U.S. and elsewhere; the oppositions [f/θ] and [v/ð], as in *fin/thin*, *vie/thy* are lost in some varieties of English (only [f] and [v] occur in some varieties of Cockney, a London dialect, and Black English). The opposition between the vowels of *pin* and *pen* is lost in Southern U.S. English.

With the single exception of the opposition [h/zero], as in *heat/eat*, which is missing in a number of English dialects, all of these asterisked contrasts are rather low on the scales of functional load—in fact, at about 30% or lower. For our purposes we assume that if native varieties of English can tolerate the loss of one or two oppositions with a functional load of about 30% or less, then in teaching English pronunciation we might decide not to spend the time trying to teach a few difficult phonemic contrasts with a very low functional load. In establishing priorities for the teaching of pronunciation points, one might begin with those having a high functional load.

Arrangement: The Process of Sequencing Pronunciation Teaching Points

In the arrangement, or sequencing, of features of pronunciation it often seems to be assumed that one should first teach the pronunciation of the individual phonemes, leaving problems of rhythm and intonation to be dealt with later, if at all.

My own experience, however, suggests that other arrangements may be more useful. For example, it may be best to begin with rhythm, particularly in teaching English to speakers of languages with a very different kind of rhythm, such as French and Japanese. A possible arrrangement of an English pronunciation course might be as follows.

1. Rhythm, Stress, and Intonation

It might be useful to practice producing feet with varying numbers of syllables, introducing at the same time minimal intonation: two basic tones, falling (for statements and WH-questions) and rising (for YES/NO questions). The following are examples of the kinds of utterances to be practiced in teaching basic rhythm and minimal intonation. The vertical lines indicate divisions between feet, and the bold type represents the *tonic syllable*, that is, where the basic falling or rising tone occurs within the tone group. In this type of exercise, one starts with feet consisting of only one syllable, goes on to feet of two syllables, then varies the number of syllables in the foot. The correct rhythm can be suggested by beating time, always at the rate of one beat per foot.

Chart 2

| A | B | C | D |.....| AB | CD | EF |.....| AB | C | DEF | G |.....etc.

| Tom | bought | Jane | two | **books** |

| Tom bought | Jane two | **books** |

| Tom bought | **Jane** two | books |

| Tom | bought Jane | **two** books |

| Tom bought Jane | **two** books |.....etc.

2. Consonants: Syllable Openings and Closings

Here we deal primarily with syllable-initial and syllable-final consonants and consonant clusters. The distinction between syllable initial and syllable final is extremely important when we are dealing with speakers of languages which, unlike English, have a different consonant inventory in these two positions. For them, the learning problem is quite different for initial and final consonants. We deal with consonants before dealing with vowels, because a reasonably correct pronunciation of consonants is probably more important for intelligible and acceptable English than a correct pronunciation of vowels. For some learners consonants present greater difficulties, requiring longer and more careful practice for some learners.

I do not intend to discuss here specific methods of teaching consonants; however, I would like to stress the following important point. The English consonant clusters that occur initially in syllables all have one important characteristic: They all involve *close transition* between the consonants.

For example, many learners have difficulty pronouncing the following clusters: *pl, pr, py, bl, br, by, tw, dw, kl, kr, kw, gl, gr, gw, my, fl, fr, fy, vy*. Such clusters are heterorganic in that the successive consonants are articulated by different organs or different parts of the same organ. This can be termed *articulatory overlap* with the articulation of the second consonant formed before the articulation of the first consonant is released. These clusters can be taught by telling the learner to form the second consonant first. This piece of *applied phonetics* (utilizing our knowledge of the phonetic fact of articulatory overlap) sounds unusual, but it is quite an effective way of getting people unfamiliar with English consonant clusters to pronounce them correctly.

The remaining English consonant clusters, *tr, dr, ky, gy, ny,* θr, ʃr, and those beginning with *s*, that is, *sp, st, sk, sm, sn, sf, sw, spl, spr, spy, str, ski, skr, skw, sky*, present slightly different, but not difficult, problems.

3. Consonants: Open Transition

Having taught close transition between consonants in clusters, the next problem is to teach the contrasting *open transition* between consonants that is usually regarded as a short,

unstressed vowel. I am referring to such contrasting pairs as *tr* versus *t·r* (where [·] represents the extremely brief open transition between the consonants) as in *train* versus *terrain*, *pl* versus p·l in *plight* versus *polite*, *kl* versus k·l as in *claps* versus *collapse*, *lp* versus l·p as in *scalp* versus *scallop*, and so forth. Since many foreign learners of English tend to give far too much weight to these very short unstressed "schwa" vowels, it is important to emphasize that these are not really vowels, but only brief open transitions between consonants.

4. Vowels and Diphthongs

In sequencing pronunciation points for an instructional program, the fourth and final feature of focus is vowels and diphthongs—the syllabic nuclei. Continuing attention can be given to rhythm and intonation, consonantal articulation, and syllabic transition as attention moves to the vowels and diphthongs of the syllabic nucleus.

The Presentation Process: Five Principles for Pronunciation Instruction

In the presentation of features of pronunciation, five principles of special importance are: (a) precise description; (b) concentration on basics, not symptoms; (c) silent introspection and practice; (d) utilization of all sounds known to the students; and (e) use of imitation and slowed-down speech.

1. Precise Description

A precise description of a sound must follow exacting criteria. It must be accurate and sufficiently detailed so that, if followed, it cannot fail to guide the student to the correct pronunciation. For example, consider the English consonants [f] and [v]; these sounds are generally described in textbooks as *labiodental*. This is accurate as far as it goes, and in many cases it may be enough to instruct the learner to place the lower lip against the upper teeth. This instruction, however, may be inadequate for learners whose native language has no labiodental sounds. I have found that if you tell Japanese speakers to place the lower lip against the upper teeth, they may fold their lower lip backwards and inwards, making contact between the backs of the upper teeth and the outer part of the lower lip. To avoid such errors the instruction must be more detailed, that is, place the inner part of the lower lip against the edges of the upper teeth. It is essential to describe these sounds not merely as labiodental but as *endolabiodental* (i.e., involving the inner part of the lower lip).

2. Concentration on Basics

In saying "teach basics, not symptoms" I have in mind the fact that the most obvious aspect of a sound may, in reality, be superficial—a symptom of some deeper, more important, underlying feature. For example, in English the voiceless stop consonants, *p, t, k*, are *aspirated* preceding a stressed vowel. The most definitive feature of aspiration is the delayed onset of

voicing which can be described as a little puff of breath represented by the superscript *h* in [p^h] [t^h] [k^h]. But this puff of breath is not the whole story, rather this aspiration is symptomatic. During the articulation of the closed phase of these voiceless aspirated stops, the glottis is wide open. As it takes a little time for the glottis to be narrowed sufficiently for the vocal cords to start vibrating, the onset of voicing is delayed for a fraction of a second. In unaspirated stops, on the other hand, the glottis is in a nearly closed position during the stop, and consequently the vocal cords are ready to spring into vibration the instant the release of the closure allows air to flow through the glottis. In other words, the basic distinction between aspirated and unaspirated voiceless stops is the configuration of the glottis during the stop phase.

Aspirated Stops. How can a teacher utilize this phonetic knowledge in teaching aspirated stops to those who do not have them (e.g., French speakers learning English) and unaspirated stops to those who have only aspirated stops (e.g., English speakers learning French). What the teacher can do in the first case is induce the French speaker to articulate voiceless aspirated stops with the glottis in the wide-open breath position. What can be done in the second case is to help the English speaker produce voiceless unaspirated stops with the glottis in the nearly closed whisper position.

A useful technique for teaching aspiration can begin by getting the learner to produce a prolonged outflow of breath. Then, while concentrating on keeping the air flowing, ask the learner to superimpose a quick oral closure, [p], [t], or [k]. This may be roughly symbolized as [hhh^{p}hhh], where the raised [p] is used to suggest that the oral closure is briefly superimposed on a continuous outgoing breath stream. The important things to suggest to students are that they try to maintain the breath flow and to feel the wide-open glottis throughout the production, especially during the short period when the lips are closed for the [p]. Have the learner say this again and again, shortening the initial stretch of breath little by little and always striving to maintain that feeling of wide-open glottis: [hhh^{p}hh], [hh^{p}hh], [h^{p}hh]. The two next steps are: (a) to drop off the initial [h] altogether, retaining only the feeling of wide-open glottis throughout; and (b) to add on a vowel after the breath flow, which is progressively shortened, [phhha], [phha], [pha].

Unaspirated Stops. Teaching unaspirated [p], [t], [k] can proceed along analogous lines; however, rather than maintaining a prolonged [hhh] throughout the stop, the learner must produce prolonged and maintained whisper, eventually reaching the point where the feeling of whisper is maintained during the stop of [p], [t], [k]. The learner produces silent stops with whisper configuration of the glottis during the stop. The learner can then add a vowel immediately upon release of the stop.

A second example of teaching basics rather than the symptoms involves [θ] and [ð] as in *thin* and *then*. These sounds are usually described as *dental* or *interdental* fricatives. In fact, the dentality of these sounds (i.e., the near approach of the tip and rim of the tongue to the

edges of the upper teeth) is largely a secondary effect. A more fundamental characteristic is the relatively flat and spread configuration of the front part of the tongue.

Let us begin by contrasting the production of the flat fricative [θ] with that of grooved fricative [s]. The high-frequency hissing sound of English [s] is produced by channeling the flow of air through a groove formed between the blade of the tongue and the alveolar ridge, and directing the high-velocity jet against the edges of the teeth. A good deal of the hiss noise of [s] derives from the turbulent flow of air past the teeth. In contrast, in the production of [θ] the tongue is in a flat configuration, so that the channel between the tongue and the alveolar ridge is much wider. Consequently, the air flows much more slowly. There is no high-velocity jet striking the teeth, and the resultant friction of [θ] is quieter and lower pitched than the hiss sound of [s].

One can begin to teach [θ] by getting the student to articulate an [s] several times at first aloud and then silently, noting the feeling of the sides of the tongue blade pressing up to the ridge behind the teeth, leaving a very narrow grooved channel. When quite conscious of this feeling, ask the student to allow the tongue to relax and flatten. Having consciously contrasted the feeling of the tense and very narrow channel of [s] with the relaxed, flattened, and wide channel of [θ], the student can try directing an air stream through these two contrasting formations. Ask the student to alternate the sounds [s] and [θ], noting that the resultant gentle wide-channel hiss requires little or no adjustment to turn it into a very acceptable [θ].

Teaching [θ] in this manner emphasizes the fact that [θ] is a flat, wide-channel, low-velocity, quiet hiss, compared to a grooved, narrow-channel, high-velocity loud and noisy hiss of [s]. This teaching technique is at least as effective as concentrating on the secondary characteristic of the proximity of the tongue rim to the edges of the upper teeth. It must be noted that once an articulation has been taught, intensive practice of words and phrases containing the sound is required to make its regular use in connected speech automatic.

3. Silent Introspection

We have already touched on the third principle—the use of silent instrospection and practice. It is hardly possible to overemphasize the importance of this. Pronunciation instruction usually concentrates solely on practising sounds aloud. This is quite understandable since sounds are perceived by the ear and must be said aloud to be heard. However, the sounds of languages are the result of articulatory activities in the vocal tract, and focusing the students' attention on these activities can be very helpful. Whenever you make sounds aloud, the auditory impression tends to mask or override the sensations of muscle movements, the proprioceptive sensations. Yet student awareness of these proprioceptive sensations can be a useful adjunct to making the articulatory adjustments necessary for learning the articulation of new sounds.

Silent introspection about sounds provides a starting point for proceeding from the known to the unknown in learning new articulations. We saw an example of this in the development of lax, wide-channel [θ] from tense, narrow-channel [s]. Another example is the teaching of [ʃ] from [s] to persons who lack this kind of distinction in their own language (e.g., Spanish speakers).

In preparing to teach the [s] and [ʃ] distinction the teacher should begin by first *isolating* the [s] of *see* and the [ʃ] of *she*. A teacher's ability to lift any articulation out of its normal environment, without altering it in the slightest, is a very valuable skill. Having isolated [s] and [ʃ], alternate them slowly and deliberately many times once or twice aloud and then silently. With a little introspection the learner can note that the articulation of [ʃ] is a little further back than that of [s]. At the same time the learner will probably be aware that the lips are in a neutral or spread position for [s] but are slightly rounded for [ʃ]. Introspecting more intensively, ask the student to feel the tip and rim of the tongue lightly touching the backs of the lower teeth for [s]. This contact is broken when the tongue is slightly shifted back for [ʃ]. A teacher who has clearly felt this important articulatory difference is in a more informed position for teaching it than one who has not.

A similar technique can be used in teaching Spanish speakers. Although Spanish has no post-alveolar fricative [ʃ], they do have a post-aveolar affricate [tʃ]. Learners can be guided to introspect silently about its articulation and apply the knowledge thus acquired to their production of [ʃ].

The teacher can experiment with many other sounds, and employ silent articulation to learn how various sounds are produced and can be deliberately manipulated. For example, silent alternation of the tense and lax vowels [i] and [ɪ], as in *beet* and *bit*, is quite revealing. By studying vowels silently, one can attach a genuine, introspectively experienced meaning to such labels as front, back, high, and low.

Through silent articulatory experimentation, the ability to round and unround any vowel at will can be acquired. Keeping the tongue in a rigidly fixed position, the learner can slowly and deliberately add or remove lip rounding. Not only is this skill useful to the English speaker in acquiring the pronunciation of rounded front vowels in French or the unrounded, high, central to back vowels in Russian and Turkish, but it is often useful to teach it to learners of English. A first approximation to the difficult vowel of *bird*, for example, can sometimes be taught by having the student unround a back [o].

4. Utilization of Known Sounds

The fourth principle is the utilization of all sounds known to the students. Teachers should resist being influenced by conventional or stereotypical views on the teaching of pronunciation, and thus fail to take advantage of the articulatory possibilities of their students. For example, knowing that the French [i] and [u] sounds are too tense and close to serve as

English [ɪ] and [ʊ] in *pit* and *put*, we can capitalize instead on the fact that French has the more open vowels *é* and *o* (in *été* and *moto*). Although these vowels do not occur in closed syllables in French, it is quite easy to teach a French speaker to use them for the English vowels. They may not be perfect, but they are much better substitutes than the tense French [i] and [u].

Many years ago when I was teaching at a short summer course in Rumania, I observed that my students consistently mispronounced the (British, RP) vowel of *bird*. They pronounced it as something like [berd] with a trilled [r]. However, I also had noticed that in their own language there was a vowel that was almost identical to the English "bird" vowel, written as *ă*. It only occurred short in Rumanian, but I found that by writing *băăd* with two *ă*'s and asking them to read it I could induce my students to pronounce an almost perfect *bird*.

Another example involves speakers of the Dravidian language Tamil. Like speakers of many other Indian languages, Tamil speakers generally use a trilled [r] in speaking English. This appears to be largely a matter of convention, supported by the orthographic and orthoepic facts that trilled [r]'s of Indian languages are normally transliterated with *r*. Consequently the letter *r* is associated with trilled [r]. What is overlooked is that in some dialects of Tamil there is a sound, heard in the middle of the word *paṛam* "fruit," which is similar to a typical American [r] and is a much better sound to use in teaching English.

Further, most people are aware of dialectal differences in their own language, and they can often imitate dialectal sounds. It is useful for pronunciation teachers to study the dialects of their students' language, since such information can be useful in teaching English sounds. For example, although Athenian Greek does not have the [ʃ] or [tʃ] sounds in English *ship* and *chip*, several other Greek dialects do. These can be taught by asking an Athenian to imitate the Cretan pronunciation of the greeting *xairete* or the word *kai* "hand," which begin with [ʃ] and [tʃ] respectively in Cretan pronunciation.

Finally, everyone can make all sorts of "nonlanguage" sounds. These can sometimes serve as a basis to build the articulation of foreign sounds by conscious introspective experimentation.

For example, deep velar or uvular articulations are foreign to American English, but most Americans are familiar with the exclamation of disgust—*yecch*! That word contains a voiceless uvular fricative or trill. Another source of uvular articulation upon which the teacher can build is gargling. The articulation of a gargle is uvular, and it can be a useful basis for acquiring a uvular trill or fricative.

Surprisingly, a gargle can sometimes be used as a starting point for the acquisition of a certain rather common type of American [r] or the vowel in *bird*. This type of [r] has the whole body of the tongue bunched up in the mouth with a hollow or furrow in it at approximately the velar articulatory zone. This furrow is quite like the furrow in the back of the tongue in

which the uvula vibrates in the articulation of a uvular trill. Consequently, one can arrive at this type of American [r] as follows. Produce a prolonged gargle or uvular trill; stop the sound, but continue to hold precisely the same tongue configuration. Do this several times taking care to get the feeling of that tongue configuration, noting particularly the sensation of the furrow in the centre line of the back of the tongue. Now, holding that articulatory posture produce voice, but no trilling of the uvula. With a few deliberate adjustments of the tongue posture, one should arrive at a sound closely resembling a type of American [r] or "bird" vowel.

5. Imitation and Slowed-Down Speech

The fifth principle is imitation and slowed-down speech. Firstly, the pronunciation teacher should cultivate the skill of imitation in order to produce as exact a replication as possible of one's students' pronunciation. By exactly imitating a mispronunciation, the teacher may be able to analyse and discover what is wrong with it. Furthermore, it is helpful to students to encourage them to listen to an accurate imitation of their mispronunciation contrasted with the correct pronunciation.

Secondly, slowed-down speech is also useful to cultivate. One cannot expect students at an early stage in learning a language to pick up details of pronunciation from rapid or normal speech. On the other hand, the slowed-down speech of an unskilled teacher will normally contain numerous distortions. What one has to do is to practice assiduously saying words, short phrases, and longer sentences at a very slow tempo, but retaining, as far as possible, all the pronunciation features of normal or fast speech. The teacher who does this must be very conscious of the intonation, the rhythm, and the sounds of the normal pronunciation. In slowing down one must be very careful to keep the relative pitches of successive syllables as they were; to keep the relative durations of the slowed-down ("stretched") syllables the same as they were; and to retain all the "weak" pronunciations, the ultrashort open transitions of the original becoming short, central "schwa" vowels. This takes practice, but it can be done and is very useful.

Conclusion

It is sometimes thought that using phonetics in teaching pronunciation means using phonetic transcription, clearly that is a very inadequate view of what it means to use phonetics in teaching. In the preceding paper I have given a brief accounting of what it really means to "use phonetics." It means to use the knowledge and, above all, the skills of the phonetician whenever possible.

I emphasized that teaching pronunciation is teaching a motor skill. It is teaching students to do something: to produce sounds, not merely to listen. You cannot teach guitar by making students listen to guitar music. You have to teach them precisely what to do with their fingers. In much the same way you cannot teach pronunciation by making students listen to speech. You have to teach them precisely what to do with their vocal organs. The most effective way

to do this is through intensive silent experimentation in the vocal tract. I have made a great point of this because it is so rarely practiced: Making sounds silently is one of the most important keys to the successful teaching of pronunciation.

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