

The social importance of sounds

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The present article intends to draw the attention of teachers on some aspects of an Algerian language student's sound discrimination possibility and its close relation to the socialisation process. Because of the coexistence of Algerian Arabic, Modern Arabic, Berber and French, the Algerian language learner obviously encounters relatively different problems from those that are faced by another Arab whose linguistic repertoire includes different varieties. However, we shall see that some socio acoustic phenomena can be generalised not only to Arabs in general but also to second language learners at large.

Thus, if as a result of a physical or psychological matter, a person is either unable to discriminate upon various linguistic units or, successfully match or map reality with the linguistic universe or, at least, to yield a satisfactory correlation between reality and its linguistic symbolisation, production or reproduction and representation: such a person would be considered as a sick aphasic patient needing treatment and re-education.

Our hypothesis is that any adult acquiring a foreign language stands in a position of an initial and immediate impossibility to discriminate upon, recognise and adjust to a new and different reality represented by the target linguistic systems, particularly that reality representing the acoustic system. Therefore, the foreign language learner should also, and like an aphasic, be 're-educated' for the simple

reason that he is physically and psychologically unable to perceive the total spectrum of the new acoustic reality as well as to derive and make the necessary linguistic correlations and abstractions. This "re-education " must be viewed only in terms of a correction or adjustment of the acoustic filters not in terms of an "alienating" sociocultural process. Indeed, acoustic encoding and decoding processes are so much dependent upon the values of the social universe that their abstract and physical reality can only be perceived within the conditions and limits of that universe. In other words, not only does reality exist only if it is granted a social value and reference but it is also lived only through the spectacles or prism of a specific culture. The latter transfers all its co-ordinates and its socially modified reality onto language. Such is the case, as well, for the phonetic and phonological aspects of language as pointed out in our article entitled *the social criteria of language teaching* (paper presented to the « Journées de la Troisième Université de Printemps, Mostaganem University, 1999).

An adult perceives the foreign sounds with the filter of his social universe. Consequently, there is absolutely no certainty of a one to one correlation between source reality and translated reception / perception or decoding process as well as between target reality and production or encoding process. On the contrary, the wider the gap between the social references, the wider and more difficult the matching possibility. The mismatching occurrences between the source and target acoustic signals are defined and set by the source culture and are recurrent and constant within speakers of the same culture. They take place at both the segmental and supra-segmental levels as well as for both the vocalic and consonantal systems. This can be observed simply by listening to common, repeated and rule organised mismatching uttered by various members belonging to the same speech community. In other words, this is translated by an English layman's "Arab accent, French accent, Italian accent" etc., when referring to certain foreign pronunciations.

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The social universe is responsible for L2 target / L1 source mismatching on two accounts:

- a) The role of script in the socialisation process,
- b) The role of aural sclerosis due to the different source or L1 phonological system.

The role of Speech and Writing

In the course of species development, one criterion, which participated in the widening of the gap between man and other living creatures, is, indeed, that very sophisticated system of communication labelled language. Paradoxically, it is also language, which is responsible for bringing people together, or separating them, as well as being partially responsible for both homogeneity and heterogeneity of today's world communities. It is thus language specificity or linguistic idiosyncrasy which is responsible for the way and manner, say, English people are, think, behave, feel, taste and speak English and Chinese people to be, think, behave, feel, taste and speak Chinese. The number of linguistic varieties and their hyponyms or sub varieties coincides with that of the various and numerous linguistic and cultural communities or sub speech communities. In other words, language can be held directly responsible for most social diversities and discrepancies as well as responsible for their social transmission and perpetuation.

Language can be conveyed through various **channels or media or modes**, which change with culture, time and space. These include among others, script, writing, gestures, signs, smoke signals, light signals, whistling signals, drum signals and so forth. The choice of one or the other depends and varies with cultural and spatial temporal criteria. One should not, therefore, confuse language and medium. In other words, we should distinguish the object (language) from its means of transport (speech, writing etc.,) (confer our article *la langue: un Mythe, Etudes et*

Recherches en Linguistique et Sociolinguistique, CRIDSSH, 1986). This is, indeed, rather difficult as language is an abstract or mental phenomenon, which becomes "concrete" only through the physical shape given by its medium. Thus, if a simile can be found between, say, the concepts of language and water, we could state that language is the H₂O molecule which can take several forms: liquid, ice or steam; the latter being the corollary to the various linguistic media, id est sound, or script, phone or letter, speech or writing.

It is claimed that the primary complex medium of communication that human beings used was SPEECH. We might claim that this was not the case insofar as we can postulate a prior less sophisticated channel which might have been used, id est **sign language**. This can be argued by the fact that man was a *Homo Faber* who used his hands to make things and, that he might have had also used them to convey messages, to communicate. This sign language might have been felt to be unable to express all the load of communication and, consequently was enlarged and expanded with the weight of acoustic signals that finally overpowered it to the point of reaching supremacy and making of the *Homo Faber*, the HOMO LOQUENS.

In the course of the human development, man needed to carry information to distances that went beyond the listener's acoustic reach. A need that translated that a more developed and complex set of social relations had been established and, for that reason other media but speech were needed. One of the most important and socially widespread man created medium is **script**; which instead of using acoustic "images" simply uses visual ones: drawn images or letters. The form of the letters or images as well as their link to the acoustic image varied and still varies with the cultural and spatial temporal criteria. It is, therefore, clear that script is a pure conventional, ad hoc symbolisation of language and that speech is historically prior to it. Writing is, thus, the product of a much later civilisation. Nowadays

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several types of writing systems coexist in the literary world: the character writing, the syllabic writing and the alphabetic writing.

Character writing is based on a semantic reference and not a phonological one. It is a scriptural system whereby the word is seen as an indivisible visual unit and as such is given one indivisible symbolic representation. In other words, any one idea or meaning is represented by one image. Each character represents one word. This system is adopted by such Asian cultures as, say, Chinese or Japanese.

Contrary to the character writing, both the alphabetic and syllabic representations of language were initially based on phonetic and phonological criteria. Whereas the reference for character writing is the word, that of syllabic writing is the **syllable** instead. The reference is, thus, that unit that might be intuitively and physiologically recognised in terms of both pulse and prominence criteria. Arabic is, for instance, a language that uses such a transcription method. The written sign indicates the pulse or prominent consonantal feature with an optional diacritic accompanying mark for the "following" vowel. We shall, therefore, have as many symbols or signs as consonants. The latter, in turn, represent the individual syllable and each sign corresponds to one and only one consonant. Even if we have a prosodic relation between "vowels" and "consonants" in this system "the correlation between speech and writing is, all the same, segmental instead of being of the global lexical type which characterises character writing.

The third writing system is yet based on a more discrete segmentation process. Indeed, the principle behind the Ancient Greek discovery -which was later adapted by the Romans, giving, thus, birth to the Latin alphabet-, is that each sound should be represented by an individual symbol. The concatenation of language

would yield a set of recurrent vocalic and consonantal sounds to which a set of letters would be allocated. This writing system is, therefore, supposed to be a fair representation of the phonetic or phonological aspects of speech just as it is the case -though to a lesser extent- for the syllabic system.

But if for the character or syllabic systems, the link between speech and writing has been more or less preserved, that between the alphabetic system and speech has, for several reasons, known considerable modifications. An Arab can, for instance, read and understand any Arabic written text whatever its age and the pronunciation would not be very far from that of the period in which the text was written. Nowadays the Koran can, again, be read by any Arab with the original prescribed rules of pronunciation. On the other hand, reading and understanding an English text of, say, the fifth century is not an easy task at all of the average English person, let alone would that person be able to utter that text with the original pronunciation.

Initially and particularly for Latin and Greek, there was a one to one relation between letter and sound. However, modern times have witnessed the widening of the gap between speech and writing media in most languages. From one language to another, we can see an enormous variation regarding the correspondence between the two channels. In French or Spanish, for instance, the gap between speech and writing is rather narrow but still wider than it used to be. On the other hand, English is a very good example of a lack of correspondence between spelling and pronunciation and, it is precisely that gap that Arabic syllabic cultured students do not understand and consequently participates in the confusion of English language learning. The least we can say is that English writing is far from faithfully representing speech. In fact we can, now, even consider that

because the gap between speech and writing in English is so wide, we should, in fact, think of the two media as being divorced. In other words even if English has an alphabetic writing system, foreign student should somehow consider it also as a partial character system.

Word pronunciation should not be taught in relation to the individual, segmental units or in relation to the combined 'letters' but in terms of an overall, global, total word image. In other terms, the word should be perceived as a unit and not as a combination of letters. Letters or combinations of letters directly mapped with and representative of a one to one correlated acoustic image should rather be considered as exceptions. Speech and writing, the acoustic image and the written image should be considered as two different realities that are not necessarily congruent, that do not necessarily "map" or "match" in terms of the foreign cultural referential values (syllabic or alphabetic). Instead, they should be seen as units belonging to two different parallels that can, somehow and paradoxically, meet in the social and semantic spaces.

Writing, thus, participates in hindering the acquisition and achievement of a normal pronunciation of language because the cultural background of the students prepares them, on the one hand, to reduplicate the phonetic conditions and realisations symbolised by the "mother script" and, on the other hand, to expect a one to one relation between letters or groups of letters and sound.

The consequences due to the first case are illustrated by the following instance: the teacher first pronounces a given word, then the students are made to repeat that word. The phonetic realisation can be achieved successfully but, when the word is then written on the board and the students are made to read it, the

mispronunciation and the impact of the link between the "mother script" and its phonetic realisation, is almost systematic. Thus, for instance, a word such as "that" is first correctly pronounced as $\text{t}^{\text{h}} \text{a} \text{t}$ then mispronounced as $\text{t}^{\text{h}} \text{a} \text{t}$, $\text{t}^{\text{h}} \text{a} \text{t}$ or $\text{t}^{\text{h}} \text{a} \text{t}$ and the word "yawn" is first pronounced $\text{j}^{\text{h}} \text{a} \text{u} \text{n}$ but once it is seen written, it is realised as $\text{j}^{\text{h}} \text{a} \text{u} \text{n}$.

The consequences due to the second case are illustrated by the uncontrolled drive to attempt a pronunciation of each letter. Thus, for instance, the alveolar r is pronounced in all environments, the h is initially pronounced for all words like "honest" and "honour", the letters "b" and "l" in words such as tomb, bomb, folk, talk, would, could, are almost systematically pronounced, assimilation is not applied and so forth and so on. Furthermore, the same phenomenon renders the foreign language learner perplex when he encounters a sound that is not represented in written as is the case for the intrusive r .

Foreign students should, therefore, be made to understand and accept that speech and writing may be two totally different and, somehow, unrelated media. From the moment students understand and accept that there is no obligatory one to one relation between the acoustic image and the written or visual one, that there is no obvious or constant parallelism between sound and spelling, only then would there be an abstraction allowing a certain acquisition progress.

Students should understand that script is only a convention, a mere creation or invention of an advanced civilisation, the purpose of which was an attempt to image language sounds in order to transport it to further distances or to preserve it. This was achieved with relative successes depending on the various languages and cultures. It is, thus, obvious that from the very genesis of the English language written form, there could only have been a blatant discrepancy between

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Latin letters and English sounds, for the simple reason that the set of Latin letters had been initially designed to represent the system of Latin sounds and not English ones. Hence, the first English "scholars" used a system that necessarily could not have met with the needs of the English language. They used a symbolisation set that, in fact, had been initially designed for a different phonological system. For instance, Latin used the five letters **a, e, i, o, u** to transcribe successfully and without any ambiguity the total need of its vocalic system as each letter was assigned to and directly representative of a vocalic / acoustic image. English, however, has twelve vowels or monophthongs:

[ʌ] beat, [e] bit, [ɪ] bet, [ɔ] bat, [ʊ] but, [ɔ] cart, [ɪ] because, [e] cause, [ʊ] full, [ɔ] fool, [ʌ] about, [ʊ] sir.

It is, therefore, obvious that the five Latin letters can absolutely not represent faithfully the English vocalic system. Five letters cannot render twelve sounds, unless one allows certain adjustments via letter combination and a systematic and constant one to one relation between letter / letter combination and sound. This might have generated the set of the following rules:

Rule one: letter x $\iff$ sound 1

Rule two: letter y $\iff$ sound 2

Rule three: letter n.... $\iff$ sound n....

Rule four : letter combination xy $\iff$ sound 4

Rule five : letter combination nn.... $\iff$ sound nn

However, this was neither the case with the English vocalic system nor the consonantal one with, nevertheless, some exceptions. These include for instance, at the consonantal level, some combinations of two Latin letters such as say **s + h**, **c + h** and **n + g** used to refer systematically to one psychological sound:

$$s + h \iff [\text{ʃ}]$$

$$c + h \iff [tʃ]$$

$$n + g \iff [ŋ]$$

But even these systematic relations underwent, at some point in time, some partial modifications through the "borrowing" of foreign words. The combination **c+ h** in the words "machine" and "yacht" is, thus, an exception of the exception rule as in the word "machine" it is realised [ʃ] instead of [tʃ] and has no realisation in the word "yacht":

$$\text{Machine} \iff [m \text{ ʃ } \text{æ} \text{ n }], \text{ yacht} \iff [j \text{ ɒ } t]$$

Language change is, thus, another criterion which participated in the widening of the gap between speech and writing. Throughout centuries, all languages for one reason or another have been affected by linguistic and sociolinguistic changes. English is, of course, no exception to that phenomenon. It is, therefore, for such a reason that fifth century English would barely be comprehensible to a modern native speaker. In fact, because linguistic and social change is always in progress, mutual intelligibility can be, somehow, hampered by the gap between any two generations; let alone by the consequences of time lapses measured in terms of centuries. Writing, on the other hand, is more change resistant and, it is precisely that resistance which also participated in the creation of modern mismatch between the two channels: speech and writing. For instance, pronunciation has changed so much that many diphthongal realisations have been substituted for monophthongal ones. Thus, some words that used to be pronounced with vowels are now pronounced with diphthongs. These include, for instance, lexical items such as "fine" and "five" which used to be pronounced respectively [fi: n] and [fi: v] and are now realised as [faɪ n] and [faɪ v].

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There has been no readjustment of the spelling system to pronunciation as all cultures attribute a certain sacredness to the written form of a language. This is, at least, the case for the layman's mentality: the written form is supposed to be closer to The Norm and to Truth. Thus, if the formula "as seen on T.V." participates in England in the creation of a certain relation between the customer and the product and eventually in the commercial act of selling and buying the goods, similarly script participates in the fabrication of "norms" and "truth» and, this is translated, for instance, in the common comment I personally often have as a lecturer: "but, sir I read it in a book". Thus, when I give a lecture on, say, social discrimination causes, my students would certainly not only listen, comment but might also disagree or refute some of my points, which is a behaviour one should, obviously, expect from a normal intellectual. However, if, say, the same arguments are read in an article or a "book", the information would be taken for its face value and, somehow, probably accepted as an unquestionable truth. Such an attitude is also present in the layman's conception and comprehension of the words "literature" and "grammar".

Indeed, for the layman there is no language, no grammar and no literature without writing. The origin of this misconception goes back to the very meaning of the two words "grammar" and "literature". Thus both literature from Latin "litera" and grammar from Greek "ta grammata" mean "the letters" and by way of consequence refer also to "writing" (confer our article "la langue : un mythe."). It is, therefore, no surprise that the "civilised" communities associate the NORM with script. But once science and education play their role and one is made to understand that, again, script is only the product of an advanced civilisation, that, for instance, "the Vedas" the oldest scripts known to humanity, in spite of their being written between the fifth and tenth century after date, were, in fact, elaborated between the

fifteenth and twelfth century before date. Speech and writing are only two different vehicles, means of transport of a certain linguistic variety. In teaching a language, a living language, priority must, therefore, be given to speech. One should not expect to "write" words and letters with one's tongue, this is, indeed, the domain of the hand and eyes; one should merely pronounce acoustic images and sounds which is, on the other hand, the domain of the ear and the tongue.

Aural sclerosis

Adults learning a foreign language are initially aurally totally unable to discriminate upon and recognise all the systems and structures of the target phonological set and its spectrum of acoustic realisations, as well as orally rarely efficient in adjusting to a new organisation and distribution of the so called organs of speech. Indeed, our ear and our tongue are so much dependent upon the pre-established socially defined universe references, that their essence and functions and "movements" are valid only within the conditions and limits of that universe. The latter crystallises all its co-ordinates and its socially modified reality onto language and leads the speaker/listener through the blinkers of a specified productive and perceptive direction. Thus, one hears all sounds of all languages with the filters of one's specific culture. Congruence and matching possibilities between pure reality and linguistic reality is, hence, of a rather subjective, psychological and socially prescribed matter. In other words, a sound reality exists only if it is attributed a socio-psychological meaning, otherwise its is translated as noise.

This phenomenon is not purely human specific as animals also live and often survive thanks to the possibility to discriminate between relevant and irrelevant sounds, to distinguish between a meaningful sound and a more or less irrelevant noise. Thus, generally speaking, all animals can perceive and recognise,

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among all sounds, those that agree with their species as each has a uniquely recognisable and organised patterns of sounds shared by all the members of that specie. It is these species specific systems that permit identification, integration, cohesion, of 'individuals' within groups and, by the same token, permits the very existence of that group. It is for such a reason that, say, a parrot sounds like and only like a parrot and is able to "communicate" with other parrots from afar; as well as is able to eliminate all other sounds as "noise". Thus not only do birds of a feather flock together but we can also say that, "birds of a sound together are bound" or "birds of a song together they belong".

Patterns of meaningful sounds do not only structure the nature of the group, but may also identify members of that group in terms of unique individuals, each with its own vocal print, its own 'idiolect' or rather should we say its own *idiosound* or *idiophone*. It is, thus, through this individual and unique voice print or *idiosound/ idiophone* that a seal, for instance, can identify itself and recognise the voice-identity of its offspring among hundreds and thousands of other seals present in the same environment. The sounds of other seals would be interpreted as relevant and meaningful as well as irrelevant or noise depending on whether that sounds is interpreted in terms of the group reference reality or the individual reference reality. Thus, if the seal were looking for its baby, all the surrounding noise, which is otherwise group-meaningful, would be interpreted as noise and only the identity-sounds or *idiosound/ idiophone* produced by the baby would carry meaning. That sound would indicate identity, distance and direction of the baby seal. On the other hand, any acoustic signal outside the range of the specie meaningful sounds may be interpreted as both noise and a sign of danger.

There is, yet, another use of the dichotomy sound / noise, which, this time, does not purport to recognise or communicate with other members of the group but,

used instead to recognise one's own voiceprint. This is achieved through what we call feedback. Feedback can also be used by some animals to eliminate all surrounding sounds -even those of the same specie- as pure noise. This is, for instance, the case of the bat feedback use of its own *idiosound/ idiophone* when used for the purpose of navigating or chasing insects.

Through a complex process of several time delays operated on the various

frequ*****

 *****stic signals add together giving a
 contrastive interference at the centre where all the waves are in phase. So the bats send out one sweep and when that reflected sweep comes in, it is interpreted as a pulse.

One might, however, wonder about the time break, that is to say the way to measure the reflection time. But Mother Nature has also provided for that. Indeed for each sweep that the bat emits, it, in fact, hears two pulses. The first travelling directly from its mouth to its ear and the second being a deflected wave or a reflected wave from the insect. Distance is thus interpreted through the reflection time, that is to say, the lapse of time between the two pulses. The longer the time the further the insect.

This is, indeed, a remarkable acoustic phenomenon by itself. But the bat can also do this amidst and in the presence of hundreds of others bats all sending similar sweeps. What is, therefore, even more remarkable is that each bat has its own "*idiosound*", its own sweep that matches its own ear. All the other sweeps would be interpreted as noise.

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Sound / noise dichotomy has also a socio-psychological relevance and plays a much more complex role in human relations. It is, for instance, thanks to this discriminatory possibility that a person living in front of a bus station can, after a while, find some silence in the uproar of engines. He would, thus, be able to sleep tight, but any visitor would simply have a sleepless night. It is often, also, thanks to this discriminatory possibility that parental roles are distributed. Thus whereas any suspicious sound would wake up the father (meaningful sound), the mother might remain asleep (noise). On the other hand, the father might remain asleep (noise) and the mother might be awoken up if the baby cries (meaningful sound). One can, also, tune one's ear (sound) to a particular low amplitude instrument in the symphony of the several instruments participating in the musical partition (noise). The human ear can, therefore, be selective as to what to hear. This selection can be wilful or unconscious as well as social or psychological.

Man can produce an infinite number of vocalic and consonantal sounds but society would group them into culturally significant finite sets. It is, therefore, obvious that the social variations would induce different number of sets, different linguistic organisations, different phonological sets, and different sound groupings. It is for this reason that different languages have different numbers of vowels and consonants, recognise a given sound as meaningful or noise and consider such or such a sound as being different from another (different phonemes) or belonging to the same set, the same "family" (allophones).

However, once society has compartmentalised the spectrum of sounds into socially defined and rigid categories, the individual would only perceive sounds in terms of this compartmentalisation which functions as a filter. It is for such a reason that initially an Algerian student is not physically able to perceive the vocalic differences between e i: e and e e , e i e and e e , e e and

ʔ, a and ʔ, a and ʃ, ɔ and ʃ ɔ:
 and ɪ, ʊ and u: as well as the consonantal difference
 between, say, a dental plosive and an alveolar plosive, between a fully voiced
 consonant and a partially voiced one, between voicing and devoicing in certain
 syllabic positions, between aspirated and non aspirated environments, and last but
 not least at the suprasegmental level between various, rhythms, tones, pitches and
 amplitude curves. In other words one might be convinced to be saying "black" but
 is in fact pronouncing "white".

Some of the "mistakes" or "mis-perceptions" are somehow encouraged by
 the traditional phonetic labels. Thus students are taught that English has a long and
 a short ɪ as well as a long and short ɔ and a long and short ʊ. Label
 emphasis is put on length rather than quality and this a terrible mistake in the sense
 that students are primarily oriented towards a length discrimination rather than
 towards the most important vocalic qualitative discrimination. Because it is also
 relevant in the native language, the length discrimination can be perceived and
 understood. However, it might not be systematically and correctly applied because
 its meaning and role or function varies according to each linguistic and
 sociolinguistic system. Length can have a syntactic function, a semantic function
 and a purely phonological function. However the distribution and application of
 these functions change from a language to another

On the other hand, the vocalic discrimination remains very poor indeed,
 both because it is not phonologically and sociolinguistically relevant as well as
 because of the theoretical approach, methods and quite insufficient time attributed
 to ear and tongue training. Thus, notwithstanding certain sociolinguistic parameters

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determined by genderlectal or sexlectal and sociolectal differences, a word such as "please" could be rendered indiscriminately as : ʔ pl i:z ʔ, ʔ pli zʔ, ʔ pʔli:z ʔ, ʔ pʔli zʔ, ʔ pʔi:zʔ, ʔ pʔɜ: zʔ, ʔ plɜ: zʔ, ʔ plɜ zʔ, ʔ pʔlɜ: zʔ, ʔ pʔlɜ zʔ, ʔ pʔɜ: zʔ, ʔ pʔɜ zʔ, ʔ ple: zʔ, ʔ ple zʔ, ʔ pʔl e: zʔ, ʔ pʔl ezʔ, ʔ pʔe: zʔ, ʔ pʔe zʔ, ʔ pʔe i:zʔ, ʔ pʔe i zʔ, ʔ pʔe i:zʔ, ʔ pʔe i zʔ, ʔ pʔe: zʔ, ʔ pʔe zʔ, ʔ pʔe i:zʔ, ʔ pʔe i zʔ, ʔ pʔe i:zʔ, ʔ pʔe i zʔ, ʔ pʔe i:zʔ, ʔ pʔe i zʔ by a student who would have learnt some French at school. However a fully Arabised student might also voice the initial bilabial plosive adding, thus, to this set the following possibilities: ʔ bl i:z ʔ, ʔ bli zʔ, ʔ bʔi:zʔ, ʔ bʔɜ: zʔ, ʔ blɜ: zʔ, ʔ blɜ zʔ, ʔ bʔɜ: zʔ, ʔ bʔɜ zʔ, ʔ ble: zʔ, ʔ ble zʔ, ʔ bʔe: zʔ, ʔ bʔe zʔ (for the purpose of this article the symbol ʔ ʔ ʔ, is used to represent the voiceless lateral fricative and ʔ ʔ ʔ the dark liquid "l"). Furthermore, if the extremes of the spectrum beat, bit, bet, bat realised respectively as ʔ bi:t ʔ, ʔ bɜ:t ʔ, ʔ bet ʔ, ʔ bɜ t ʔ - that is to say ʔ bi:t and ʔ bɜ t ʔ -, are clearly perceived, it is not obvious that perceptive and productive discriminations would be made on the difference between the pairs ʔ bi:tʔ versus ʔ bɜ:tʔ and ʔ betʔ versus ʔ bɜ:tʔ. Therefore, words such as "head" and "bet" can be realised respectively and indiscriminately as ʔ hɛd ʔ or ʔ hɜ dʔ and ʔ bet ʔ or ʔ bɜ:t ʔ. If, however, the word to be pronounced normally with the vowel ʔ ʔ ʔ appears in writing with the letter "a" as in, say, "bat" or "hat" the sound close to cardinal vowels number four ʔ a ʔ and five ʔ ʔ ʔ or the central

vowel ɒ would be used instead; giving us the following possibilities ɒbʌt, ɒbat, ɒbʊt, ɒbɜt and ɒhʌt, ɒhat, ɒh ʊ t, ɒhɜt ; hence a semantic confusion between the words " but" versus " bat" and "hat" versus "hut" which only the linguistic and social contexts would disambiguate.

Therefore, for adequate pedagogical results, the foreign language learner's ear and 'tongue' should be 're-educated' and made to dissect reality with a neutral mind devoid of any cultural reference and implication . Therefore, Phonetics science, besides its purely theoretical aspect, should include a branch that we would be labelled "*re-educational phonetics*", a branch that would include both what is traditionally called articulatory phonetics and that referred to as acoustic phonetics. The phonetician should, on the one hand, have the same preoccupation as a speech therapist's and use the same methods and tools; on the other hand, make use of techniques and instruments that would help the foreign learner , actually physically visualise what he is performing and allow him to concretely compare his utterance with what ought to be pronounced id est, the model or target segmental unit and suprasegmental combination. In order to do so, machines such as, for instance, an oscilloscope, a spectrograph , a sonograph and a mingograph should be considered as pedagogical tools of prime necessity.

These instruments should be used ,among other things, to teach the student to identify orally and visually the identity of each and every foreign segment id est, a vowel, semi vowel, diphthong, triphthong or consonant. As was conceived by Fourier in the nineteenth century, the acoustic spectrogram or sonogram allows the visualisation of the harmonics that build any complex sound. The student would, therefore, use a sonograph in order to match his formants set (F1, F2 ,F3,

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F4) to the bunch that characterises the model sound and graph. In doing so, the student would, thus, indirectly learn to have a minute control of his organs of speech as well as of his ear. By the same token, this would teach the student that different physical realities, id est, different acoustic spectrograms can be granted the same psychological reality and, therefore, grouped under the same phoneme. The distribution of the social / psychological reality and the linguistic reality would be rendered palpable and more explicit.

Make a student understand the linguistic and sociolinguistic role of amplitude (loudness) and frequency (pitch) variations and, it is only then that he would be able to control and make an adequate use and adjustment of amplitude and frequency variations in L2.