

Fundamentals of Experimental Phonetic Research in General Linguistics

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Annotation: *This article is devoted to the classification of the peculiarities and possibilities of experimental phonetics in linguistics. It also provides information about the definitions of experimental phonetics, its history, objectives and practical and theoretical research carried out in this field around the world.*

Key words: *Experimental phonetics, subjective and objective methods, Marey pattern, “a small clockwork kymograph”, Kazan school of linguistics.*

Language is a way of communication in everyday life. Common people can do speaking as significant as linguists do. They take it easily and think that speaking and understanding is as organic as breathing. Nevertheless, it is not same for all of the people. When we start to learning a foreign language, it is expected that there are many things to study as reading, listening, speaking, writing, and, sure, vocabulary. Good pronunciation is a key of good speaking. [5.23-25p.]. Learning rich vocabulary and grammar is essential for people who want to learn some languages, but they have to pronounce with its structures or words correctly. The capability of speaking English should realize that the well pronunciation and intonation, stressed syllables can show relevant communication in a conversation or in the speech. In the 1950s, learners spent more time in the language lab listening to and restating sounds and combinations of them. That systematic line is truly complicated. [6.56p.]. In modern era, new learners also encounter host of complications in English pronunciation for the several reasons. First and foremost, several sounds embody in the English sounds. Next, native speakers in English pronunciation is completely different form one language-rooted with ending sounds for gaining well pronunciation structure. As a result, it is fact that making mistakes are done by students in learning pronunciation process in their speech and listening comprehends. [14.141-146p.]

Experimental phonetics is a branch of general phonetics that studies the units of sounds and human speech using the experimental method. It is a field of study that focuses on the articulatory and acoustic aspects of sound, and deals with questions such as whether or not to support or refute theories or hypotheses, and whether or not to test them. Experimental phonetics emerged in the second half of the 19th century. It was founded by V. A. Bogoroditsky in Russia and the Rousselot in France. [3.5p] The work of both scientists developed under the influence of experimental psychology and physiology, thanks to which the possibility of reliable and accurate measurements of sound phenomena of language was established.

Firstly, An Aspect which influences to pronunciation is a native language. When learners want to acquire the target language, that language might be moderately different and seldom has other grammar, speaking structure that native speakers. [2.56-59p.]. According to Kenworthy, it is also stated that the first language is the most dominant factor to effect students' pronunciation, especially,

accents of them. If they have learnt a well-known language with a sound system of their native one, they will have tended to process affectively in their own difficulties. [8.90-92p.]. It should be recommended that learners need to study target language from one-rooted language of language family. It is a great opportunity to achieve high goal in learning process.

Secondly, prior experiences of pronunciation learning are also impacted upon learners' success with current attempts. Most of the students do not pass to pronounce lots of words perfectly or correctly from the starting. In consequence, they may tend to their own previous styles of pronunciation (Figure 1),

No.	Word	Correct Pronunciation	Student's Pronunciation
1	red	/red/	/red/
2	write	/raɪt/	/raɪt/
3	zero	/'zɪ.əʊ/	/'zɪr.əʊ/
4	agree	/ə'gri/	/ə'gri/
5	factor	/'fæk.tər/	/'fek.tər/
6	car	/ka.r/	/kar/

Figure 1 they should be more irrelevant to misunderstand if it will be pronounced words incorrectly. It is very noticeable point that step by step, misunderstanding words might be pronounced correspondingly. For instance, some words are truly similar: cups, cubs and coffee, copy and rise, rice and breeze and three, tree and others. (Figure 2)

(short & long) Vowels and Diphthongs		
1	Fill	Fell
2	Wash	Watch
3	Bag	Badge
4	Leisure	Ledger
5	Lunch	Launch
6	Rival	Rifle
7	Dot	Doubt
8	Hit	Heat

Figure 2

As we know that old methods, structures are not productive in these days and, also truly old-mode, bored for new learners in pronunciation sphere. In addition, they have not lived in an English speaking country encountered issues in mastering English phonetics. [13.67-84p.]. Clearly, in classrooms or in an auditorium, English pronunciation is not done enough that the lack of possibilities to practice or analyze this type of problems. For these reasons, learners should do efforts in laboratories which can help to improve the rate of pronunciation related to electronically devices. It is called that an experimental phonetics. It is an irrefutable fact that for achieving success in speaking or listening process in English every student should have ability and their revealing side to the second language. Surely, if students need to improve their speaking and listening skills, there is not sufficient recourses to help them, such as making dialogue or watching host of movies or series in English, or teaching lessons and etcetera. These studies show that students with poor pronunciation should learn in experimental phonetic laboratories or should pronounce with contemporary tools.

Next, nowadays, most of children prefer to learn a new language rather than adults and they have got enough sensitive periods to do anything which related to various aspects of learning languages, however they have not enough ability which knowledge of native language or phonetic ability,

intonation factor or other things related to speaking or listening and decline with age. [14.141-146p.]. Consequently, younger learners may tend to be an annoying amalgamation while acquiring process in their second language. Furthermore, it is common viewpoint that ability of learners' pronunciation can be enhanced with making well effort and using modern devices in language's phonetics, as well as, this phonetic ability of students should be developed by paying attention of rhyme of sounds and making great tries.

Another factor which exaggerating problems of phonetics is lack of motivation. In process of learning everything, to people or as students need to high motivation forms their parents or friends to enhance their successful life. According to phonetics, in pronunciation everyone should have personal motivator. In particular research is shown that teenagers can become dominantly accomplished, surprisingly as native as speaking in target language, when they are motivated to do it. [10.502-518p.]. Moreover, teachers would accelerate learning style to do well-pronounced student, or carry out a variety types of assignments to him or her and great structure of phonetics if learners focus on pronunciation and accents in class.

Giving a correct form of instruction to learn language is vital. Students must concentrate on four main sphere in learning second language, such as reading, listening, speaking, writing. In general, in speaking vocabulary in use and pronunciation are taught in the first year of study that introduced the sound system, intonation and alphabets of languages. Many researchers have surveyed that this instruction also helps to learn target language perfectly. [4.1-17p.]. Because phonetics is a wide-ranging field, and it does not necessarily have a direct connection with the study of language itself. While the phonetic disciplines listed above can be studied independently of one another, they are clearly connected: speech organs move to produce sounds, which travel in sound waves, which are received by the ears and transmitted to the brain.

Recommending Solutions

Pronunciation is a necessary detail of language teaching. We know that while practicing it lots of students encounter these problems (it was considered). This part discusses some of the solutions to break borders with pronunciation problems.

Computer-based cooperation. 21th century is a technological century, so that it is provided virtual interaction that able to do more things in phonetics, such as doing speech with foreign speakers or using these tools while they learn pronunciation. Technology can exchange real ambience of interacting to other people virtually with the deputy of net connection as an old method of learning phonetics with "a small clockwork kymograph". [12.107-119p.]. (Figure 3)

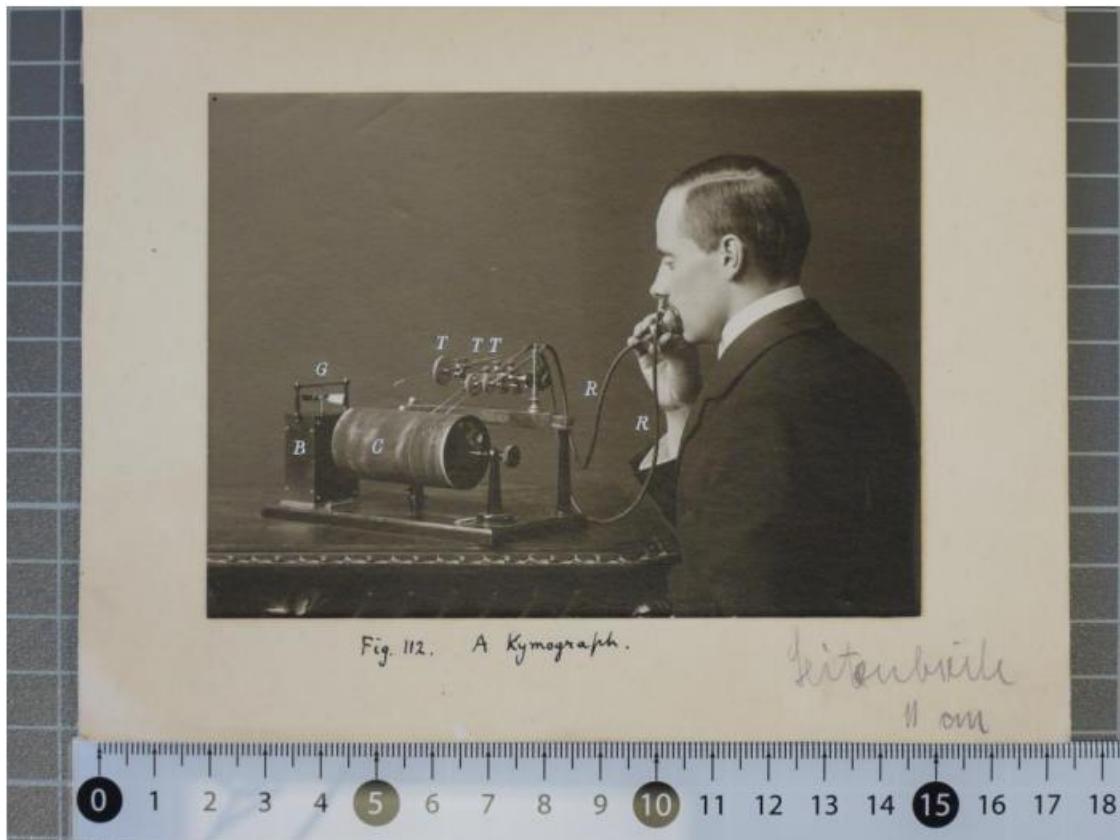


Figure 3: Daniel Jones was printed firstly a photograph in the first edition of his *Outline of English Phonetics* (published in 1918, though largely written before WW I). The small clockwork kymograph is recognized as the ‘petit inscripteur’. It is used a mouthpiece and a nasal olive by DJ, is associating by rubber tubes to tambours of Marey pattern. The kymograph has a third tambour, however, no connection has been made to it. The smoking of the drum seems truly bumpy. The small clock kymograph is a compact and portable device used in phonetical experiments to record and measure changes in phonetical parameters over time. It allows researchers to visually observe and analyze the data collected during an experiment.

In motivation section, it is counted parental support or with friendship to help learners for their psychological factors. Surely, parents are one of the greatest position in the process. Instead of them, they may be indirect character on language learning. Parents have to provide their children a variety types of facilities, paying for an extra English courses, giving more inspirational encouragement for them.

Extra e-pronunciation exercises should not bad for foreign learners. According to spelling or voicing, students should learn pronunciation in experimental laboratories that supply more opportunity to work with phonetics well.

The final target is to help students identify English words through different ways of learning pronunciation, phonetics in order to increase their pronunciation ability as well as catching the main idea in the conversation to improve their communicative skill in English. The differences of sound systems in native languages and second ones may have impacted upon negatively students’ acquirement. It is provided that pronouncing English sounds correctly are given step by step, and try to tackle problematic situations in pronunciation. This essay has shown that a large number of perspectives and ideas was mentioned. These findings can be used wide range of styles to help people who try to find learning pronunciation.

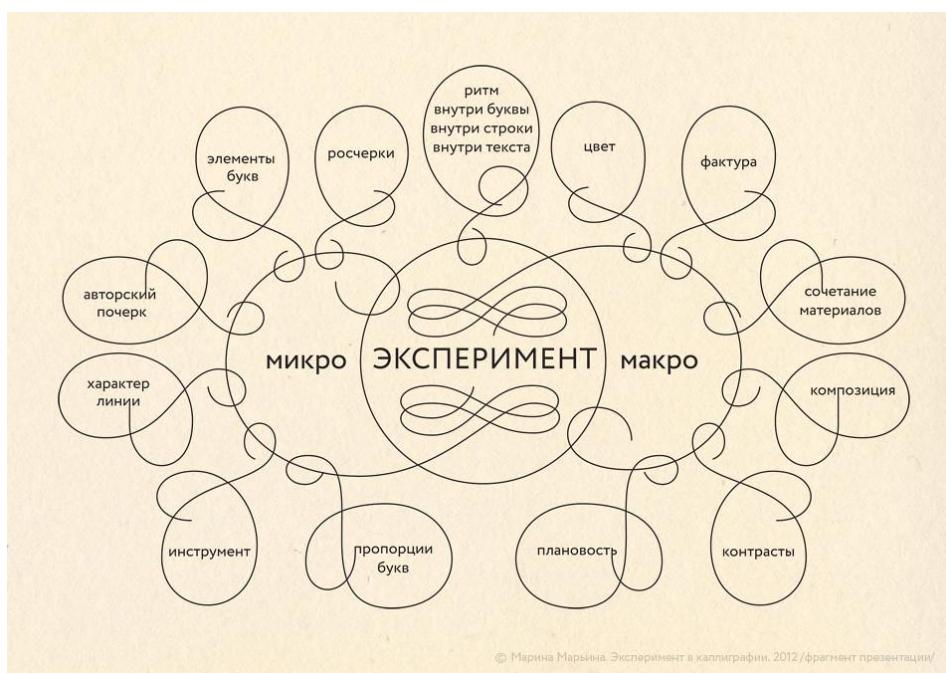
General “Experimental phonetics”

Early pneumatic equipment was also either directly borrowed by phoneticians from physiology and experimental psychology, or developed under the influence of samples of experimental-psychological and experimental-physiological equipment. The application of experimental methods has allowed

phonetics to become one of the most precise disciplines in the general system of language sciences. These methods have led to a reliable description of the sound composition and to some extent the intonation of a number of languages. As an example we can mention V.A. Bogoroditsky's, and L.V.Sherba's experimental phonetics laboratories. The studies were conducted by Rousselot, Grammont, Roudet and Tarneaud in France; Scripture, Armstrong and Ward in England; Panconcelli-Calzia Sievers, Saran, Klinghardt, in Germany, Fletcher, Holbrook, Carmody in the United States. Nowadays, significant successes of experimental phonetic researches are connected with the application to modern electro-acoustic, radio-technical and X-ray methods.

According to H. Jamolkhanov's classification, in this type of phonetics, the physical-acoustic and articulatory aspects of speech sounds are studied using special instruments (pneumograph, oscillograph, phonograph, spectrograph, etc.). These are used to determine the qualitative and quantitative characteristics of sounds (altitude, intensity, timbre, spectrum, degree of frequency), their articulation (place of production, method). [7.22p]

The role of many foreign and Uzbek scientists in the development of experimental (instrumental) phonetics is immense. In Uzbek linguistics, a number of works by phoneticians such as Akhmadjon Makhmudov and Sora Otamirzayeva have experimentally studied the units of the phonetic system of the Uzbek language, such as sounds, syllables, and conjunctions. As a proof of our opinion, we can cite such scientific works as: "Unlilar" (1992), "Согласные узбекского литературного языка" (1986), "Сонорные узбекского языка" (1980), "Словесное ударение в узбекском языке" (1960), "Звуковой состав наманганского говора узбекского языка" by Makhmudov; "Экспериментальное исследование" (1963), "Экспериментальное фонетическое исследование наманганского говора узбекского языка" (1974), "Акустико-артикуляционный анализ узбекской речи применительно к аудиометрии" (1979) by Otamirzayeva. Russian scientists such as L.V.Zlatoustova, S.V.Kodzasov, R.K.Potapova, V.Potapov contributed to this field with their ideas.



An important function of experimental phonetics is the study of speech production, which involves the study of how the human speech apparatus produces different speech sounds. Experimental phoneticians use a variety of techniques and tools to observe and analyze the movements of articulators in the process of speech production. A. Abduazizov notes that in modern phonetics, there are two main methods of determining pronunciation: subjective and objective methods. The subjective method is the oldest and most commonly used method of direct observation (seeing or hearing) of pronunciation. By direct observation, one can perceive the articulatory-acoustic properties of a sound, the difference between stressed and unstressed syllables, and whether the tone of a voice is raised or lowered in intonation. All articulatory-acoustic properties that can be detected with the

help of technical apparatus, that is, with the help of objective methods, are called experimental-phonetic examination or instrumental classification of speech. The study of the sound structure, pitch, stress, and intonation of a language with the help of known instruments allows for a much more accurate and in-depth classification. [1.6-14p]

Historically, the formation of experimental phonetics arose out of an interest in the physical properties of speech sounds. The foundations of experimental phonetics were first laid at the end of the 19th century at the University of Kazan. The founder of the Kazan school of linguistics is Y.I.N. Baudouin de Courtenay created one of the first classifications of knowledge in the field of linguistics. He suggested that in the process of learning a language, we separate intuitive, scientific, linguistic, and other types of knowledge. Subsequently, in connection with the expansion of approaches to the main paradigms of language, such as the development of the systemic-structural, communicative, functional aspects, the typology of knowledge has become detailed in the following parameters: relevance to science; social life; research methodology; dynamics of oral expression... [9.172-175p] The above aspects are characterized by V.V. It is described in detail in the works of Krasnix.

A systematic approach to the study of the phenomena and structures of language was also originally embedded in the concept of the Kazan school of linguistics. And we think that's why there's been a renewed interest in understanding the phonetic level of language as a coherent part of a linguistic unit. After that, the phonetic structure of the language was considered the most important, so that the theory and methodology of the experimental study of the sound structure of the language could be justified creatively and methodologically, and important milestones and results of future research could be predicted. It was at Kazan University at the end of the 19th century that it became possible to establish the theory and methodology of experimental study of the sound structure of language, to predict important milestones and steps of future research. V.A. Bogoroditskiy identified the main features of instrumental research that play a key role in the development of the articulatory foundations of language and speech.

This research is based on the analysis of the experimental phonetics and related to problems concerning pronunciation of English learners and resolutions. Points leading to these issues are an amalgamation of the native language, the age of learners, viewpoint of them, irrelevant looks and their inadequate knowledge of the phonology and phonetics systems of the English language. In addition to phonetic ability, also phonetic learning methods are reported as a vital stage which could be helped to enhance acquiring this sphere. However, the English stress rules are so intricate. Hence, depends on the main rhythmic pattern, the key for stress rules has been raised to make simpler the way to identify stressed syllables. The difference of sound system between English and the first language, some factors including phonetic ability, native language, prior English pronunciation learning, directions, and motivation might be impacted upon students' problem in acquiring phonetics as well. It could be concluded that these findings can be used to enhance other people who find it difficult to learn pronunciation.

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