**CONTRASTIVE LINGUISTIC ANANLYSIS AS A KEY TO EFFECIVE FOREIGN RPONUNCIATION TEACHING**

CONTRASTIVE ANALYSIS IN PRONUNCIATION TEACHING

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**Abstract.** Learning foreign languages is gaining prominence in the global world of today. To meet the needs of those mastering foreign pronunciation, new teaching techniques are required. The author argues that the method of Contrastive Linguistic Analysis (CLA) is appropriate for creating customizable manuals on L2 phonetics for L1 native speakers. CLA enables to rank negative transfer mistakes according to their frequency of occurrence; the resulting scale can be used as a basis for developing phonetic courses of any level of detail. In this paper, main principles and procedures of the method are conveyed and exemplified in results of CLA applied to German and Russian consonant sound systems.

**Keywords:** foreign language teaching (FLT), phonetic interference, negative transfer, contrastive analysis.

**1. Introduction**

It is common knowledge that learning foreign languages is becoming a universal phenomenon in the global world of today. Bilingualism is forcing out monolingualism, which has been prevalent on previous social development stages, and is thus turning into a social norm, as Rogoznaja states in (2012). Russia has not been an exception in this respect. Tumultuous events in its political and economic history of the last decades caused dramatic shifts in various areas such as culture, science, education. Just one single generation has witnessed a drastic change of the way the society dealt with the idea of learning foreign languages.

The main problem of learning languages in the Soviet Union was that gained knowledge was nowhere to be applied. As a result, only a small social layer of well-educated people working with language professionally (diplomats, interpreters, university lecturers and, to some extent, school teachers) had good foreign language skills. For the rest of the population, learning foreign languages was mostly limited to a school course of German or English. The language skills gained at school remained mostly unclaimed. Over time, they faded from memory. In the present-day Russia, the situation is different as foreign languages are learned everywhere - at school, in form of private lessons at home, at specialized language schools etc. English is – quite predictably – by far the most popular option, but German has always been and still is in demand.

It is generally acknowledged that L2 language courses aimed at speakers of a single L1 language are much more effective than those intended for everyone wishing to learn the L2, regardless of their L1. This is largely so because the former take into account typical negative transfer mistakes that L1 native speakers tend to make when speaking L2. The problem is, however, that only the grossest accent features are normally considered while many others remain ignored. The reason lies in the fact that L2 courses for L1 speakers are traditionally based on existing teaching practice without careful scientific consideration. Indeed, practical books on German phonetics for Russians normally reflect empirical observations their authors have made when teaching Russian native speakers German language. They might also be based on *some* theoretical comparison of both languages in question. E.g. Miljukova and Nork introduce in (1976: 16-17) several tables of both Russian and German consonantisms, but the authors use *different* phonetic alphabets (Latin-based for German consonants and Cyrillic symbols for Russian ones). Moreover, different sets of classification features are used, and in some cases, the same feature bears different names. It is obvious that such descriptions are inapplicable for detecting features differentiating resembling sounds in German vs Russian. For any given pair of languages, only descriptions created on the same theoretical and practical grounds enable adequate juxtaposing of their sound systems, and such descriptions definitely lack for the German-Russian language pair.

However, having one-type descriptions of L1 and L2 is just a sine qua non condition, but it is not both a necessary and *sufficient* one. To improve teaching efficiency in phonetics, an approach making use of those descriptions is needed. Such an approach does exist and has existed for half a century now. It is called *contrastive linguistic analysis (CLA)*.

**2. Contrastive analysis in phonetics: history, methodology, criticism**

When speaking a foreign language, a person inevitably makes phonetic mistakes induced by the sound system of their mother tongue. This phenomenon is known as *phonetic interference*, or *negative transfer*. In fact, interference phenomena can occur on any level of language structure, but phonetic interference differs drastically from that on any other level as one cannot speak a foreign language avoiding pronouncing “difficult” sounds, i.e. those ones they cannot articulate correctly. Whereas language deficiencies in syntax or morphology can be efficiently concealed by using synonymic constructions, such paraphrasing is impossible in phonetics, hence the inevitability of a foreign accent, which can be regarded as some sort of a foreigner’s “calling card”. Contrastive linguistic analysis (CLA) is a method that can be employed for detecting and researching negative transfer phenomena on any level of language structure – including that of phonetics.

**2.1. Brief historical review**

The first attempts to systematically study negative transfer in L2 learners’ speech were made in the late 1950s. At that time, a new discipline emerged called then *contrastive linguistics*. One of its aims was studying the mutual influence of languages in a speaker’s repertoire when learning a foreign language. At that time, two complementary methods within contrastive linguistics were developed: *contrastive analysis* and *error analysis*. Error analysis was proposed for studying divergences a person produces when speaking a foreign language, i.e. the method deals with interference phenomena *post factum*. Contrastive analysis, on the other hand, was designed to predict those elements of L2 system where speech difficulties or errors are highly probable.

In the 1960s and 1970s, linguists believed that they could predict negative transfer zones *on* *a purely theoretical basis –* i.e. by juxtaposing sound systems of any pair of languages based on contrastive analysis used as a methodological basis. This approach promised multiple opportunities of practical use, e.g. creating language manuals or even new effective teaching methods. However, some problems of this method were soon detected, e.g., by Nickel (1971), Nemser (1975), Helbig (1981), etc. As a result, early attempts of comparing language sound systems within the contrastive framework did not find much practical use in language teaching.

**2.2. CLA in phonetics: methodology**

In fact, CLA is applicable on any layer of language structure. As far as sound systems of languages in question are concerned, the principal basis for using CLA is having detailed descriptions of phonological systems of languages in question. Helbig conveyed major principles of creating such descriptions in (1981):

1. L1 and L2 are regarded as being of equal value: there is neither source nor target language. To describe their phonological systems, a metalanguage is required.
2. An indispensable prerequisite for juxtaposing languages is having individual descriptions of L1 and L2 according to the principle “describing before comparing”.
3. Descriptions of L1 and L2 should be theoretically, methodologically and terminologically uniform.

Practical guidelines of carrying out CLA in phonology can be found in a book by James (1980). The author speaks of a four-stage procedure of comparing L1 and L2 sound systems:

Stage 1: Inventorying phonemes in L1.

Stage 2: Inventorying phonemes in L2.

Stage 3: Specifying phoneme allophones in L1 and L2.

Stage 4: Specifying distributional restrictions for allophones and phonemes in L1 and L2.

Applying CLA to phonetic systems of L1 and L2 according to the above stages enables to detect interference areas, where pronunciation errors in bilingual speech are highly probable.

**2.3. Criticism and perspectives**

As stated above, the original expectations caused by the emergence of the method were soon replaced by less optimistic moods. Results of CLA applied to phonetic systems of languages pairwise turned out to be hardly suitable for practical use owing to some limitations of the method detected and described by numerous researchers, e.g. in (Helbig 1981, Nemser 1975, Nickel 1971). It is so since, on the one hand, bilingual speech may as well include such errors that CLA is unable to predict because their nature does not lie in the area of differences in phonetic systems. On the other hand, not all errors predicted by the method do really occur in bilingual speech, or they occur rarely.

Although errors of the first type have nothing to do with negative transfer, they still must be taken into account because reliable criteria for separating such “external” errors from true negative transfer phenomena are still to be developed.

As far as the second type errors are concerned, considering them is the reason why the existing CLA procedure itself has to be improved: not only should interference zones be theoretically forecasted, the forecast should also be experimentally verified. The verification may e.g. be carried out as follows: one can provide L1 native speakers learning L2 with questionnaires including all theoretically predicted negative transfer zones. Provided that there are enough informants, such verification allows detecting persistent negative transfer zones in speech of most (or almost all) informants as well as theoretically predicted zones that – for some reason – occur rarely if ever in accented speech. Otherwise stated, experimental check allows ranking all theoretically predicted zones by their frequency of occurrence in real foreigner L2 speech. As a result, a scale can be obtained with the most typical articulation negative transfer errors on one end and those with frequency of occurrence close to zero on the other. The scale can be subsequently used as a methodological basis for a new type of textbooks on L2 phonetics. For brief introductive courses of phonetics, L2 features leading to the gross errors on the “frequent” end of the scale would suffice. For more detailed courses, e.g. for university courses on L2 phonetics, less frequent errors including pronunciation nuances from the other end of the scale should also be included.

Another important issue when employing CLA is choosing the metalanguage. Generally speaking, any phonetic notation would do – given that *both* languages are described on the basis of the *same* notation. However, IPA might be the best option for a number of reasons. There are some strong arguments for choosing it when applying CLA to an L1-L2 pair, as described in (Kodzasov and Krivnova: 2001):

1. IPA is a universal notation, i.e. its data domain is universe of sounds not ascribed to any particular language.

2. IPA is phonologically oriented. It deals only with sounds that are phonologically relevant in at least *one* known language, i.e. those sounds are involved in distinguishing words (“distinctive sounds”).

3. IPA symbols are universally agreed system of notation for the sounds of languages.

4. IPA has a predominantly articulatory orientation.

However, it is important to realize that IPA has its own limits – just as any other phonetic notation. Because a limited set of phonetic features is used, the entire phonetic diversity is reduced to a finite number of distinctions. Thus, many fine nuances of articulation and phonation rendering a special touch to a particular language are ignored. In order to make allowance for those delicate nuances, one should delve into what is known as “base of articulation” of a given language. Unfortunately, various researchers understand the notion of “base of articulation” differently, which complicates research in this field. However, as far as teaching L2 phonetics is concerned, in most cases the mastering of fine nuances of articulation pertaining to the “base of articulation” area is not a major goal. If a student has learnt all L2 phonetic nuances belonging to it, it obviously means that they have acquired an L2-level close to perfect. According to the data provided by Rogoznaja in (2012), only 5% of learners do achieve such impressing results. Thus, it seems clear that the ambitious goal of teaching L2 students all subtle pronunciation nuances cannot be on the agenda of those working at new textbooks on L2 phonetics.

The fact that both L1 and L2 descriptions should be made in one phonetic notation (IPA) does not mean that only this notation must be used later on. On the contrary, if the researcher finds it more convenient, they can as well switch to another notation – but only after its symbols were assigned to those of IPA. In some cases, such a shift is justified as it can simplify the resulting description, e.g. discharge transcription from too many diacritics or indexing. Such an approach was taken in this research: IPA symbols are used to transcribe German examples, whereas Russian sounds are noted by means of Cyrillic characters, which fits well into the existing linguistic tradition.

**3. CLA of German vs Russian consonantisms: language-specific features, CLA procedure, verification**

**3.1. German vs Russian: major distinctive consonant features**

When carrying out CLA of an L1-L2 pair, it appears to be at all times useful to specify striking features of L1 and L2 sound systems before going into detail.

As is known, in Russian, palatalization is a phonological context-free feature interfusing the entire consonant system of the language. On the contrary, in German, palatalization is a purely phonetic phenomenon that can emerge in certain phonetic contexts: in fact, German palatalization is accommodation of consonants before front vowels, in particular, before [i]. It can be therefore expected that Germans, just like speakers of many other languages, would substitute a Russian palatalized consonant either with an entirely non-palatalized one, or with a semi-palatalized option.

Apart from phonological status, palatalization in both languages has further phonetic distinctions:

1. Russian palatalization is significantly stronger than that in German.
2. In Russian, practically each consonant has a palatalized phoneme pair. In German, only three velar consonants are subject to *Russian-type* (strong) palatalization: /k/, /g/, /ŋ/.
3. In German, palatalization is two-directional: a consonant is palatalized not only *before*, but also *after* a front vowel.

In Russian, non-palatalized consonants are more or less velarized - hissing and liquid sounds in the first place. As far as German is concerned, there is no velarization at all. It is thus quite understandable why in textbooks on German phonetics for Russians strong velarization of consonants is often regarded to be one of the most frequent mistakes made by Russians speaking German.

Numerous German vs Russian differences can be found in voice contrasts. In Russian, when a voiced consonant is pronounced, vocal cords keep vibrating for its whole duration. When pronouncing voiceless consonants, there is absolutely no vibration. In fact, the contrast of voicing and voicelessness is present in German as well, but here it is just a supplementary phonetic feature; there is no phonological opposition of voicing and voicelessness. In German, all voiceless consonants are strong *(fortis)* as compared to voiced consonants, which are thus weak *(lenis)*, as far as articulation and acoustics are concerned. Weak consonants are semi-voiced in most phonetic contexts, i.e. vocal cords accompany consonant articulation only in part. In some southern German dialects, weak consonants completely lost voicing; the only articulatory difference is a less intense articulation of weak consonants, as Rajevskij points out (1997).

Another point of contrast is aspirated voiceless stops, which are present in German and absent in Russian. German /p/, /t/, /k/ are aspirated in some positions (see below, Section 4).

An entire layer of negative transfer errors is triggered by differences in assimilation rules for voiceless/voiced consonants. In German, assimilation can be either regressive or progressive. If there is a cluster of consonants within a phrase, a weak consonant always assimilates to a strong one becoming voiceless or semi-voiced: *da[s] [b̥]uch (das Buch), (du) sa[ks]t (du sagst).* In Russian, consonant assimilation is always regressive: in a two-consonant cluster, the preceding consonant assimilates to the succeeding one, and thus both consonants become either voiced or voiceless – depending on the nature of the second cluster segment: *[ft]орник, [zd]ача.* When native speakers of German extend German assimilation rules to Russian, this leads to an erroneous progressive devocalization instead of regressive vocalization: *[sd̥]ача*. On the other hand, it is well known that Russians speaking German tend to regressively vocalize a strong (“voiceless”) consonant before a weak (“voiced”) one, which is a manifestation of L1 assimilation type erroneously transferred to L2: *da[zb]uch (das Buch).*

An essential source of negative transfer is extending articulatory L1 habits to L2 *by analogy* in cases, when both phonetic systems do really bear a partial resemblance to each other. E.g., in both Russian and German, a voiced (weak) consonant is impossible at the end of an isolated word. However, this regularity in German is but one manifestation of the “end of word and syllable” law. For one thing, the ban on voiced consonants is total and does not depend on the neighboring sounds. For another thing, it relates to a consonant closing any checked syllable, not necessarily the last one in a word. In Russian, on the contrary, voiced consonants can be pronounced at the end of a word – given that the succeeding word begins with a voiced consonant: *са[d b]ыл.* Russian students learning German internalize successfully the “end of word” law, but they tend to overlook the “end of syllable” law, hence numerous mistakes familiar to any Russian teacher of German: *lie[b]lich* instead of *lie[p]lich, au[z]denken* instead of *au[s]denken*, etc.

**3.2. CLA of Russian vs German consonantisms: procedure**

This paper presents results of contrastive analysis of Russian and German consonant systems implemented according to the procedure described below.

The first stage of contrastive analysis involved describing phoneme and allophone inventories of both languages in question. On this stage, all accessible literary sources were used, including theoretical descriptions of Russian and German sound systems, as well as practical manuals of phonetics. Some of the most important works involved are (Duden 2005), (Wörterbuch 1971), theoretical courses of German phonetics by Kohler (1995), Zinder (2003) and Rajevskij (1997), theoretical courses of Russian phonetics by Avanesov (1984) and Knjazev & Požaritskaja (2012), etc.

The obtained allophone inventories were subsequently interpreted and transcribed in IPA, in accordance with the IPA feature base as described in CAIPA 1999, thus providing same-type descriptions for both languages in question and meeting the main principle of CLA. On further analysis steps, German sounds were still being transcribed by means of IPA, and Cyrillic symbols were used for transcribing Russian sounds (IPA – Cyrillic correspondences are provided further where needed). The results of the CLA stage are presented in Table 1. In our CLA version, German consonantism includes 24 phonemes (41 allophones), whereas in Russian there are 36 phonemes (36 allophones).

**Table 1.** German and Russian consonant allophone inventories (highlighted are analogous sounds)

| **Consonant class** | **German** | **Russian** |
| --- | --- | --- |
| **No.** | **Allophone** | **Phoneme** | **No.** | **Allophone** | **Phoneme** |
| Obstruents |
| Bilabial stops | 1 | ph | /p/ |  | - |  |
| **2** | **p** | **/p/** | **1** | **p** | **/п/** |
| 3 | b̥ | /b/ |  | - |  |
| **4** | **b** | **/b/** | **2** | **b** | **/б/** |
|  | - |  | 3 | pj | /п’/ |
|  | - |  | 4 | bj | /б’/ |
| Coronal stops | 5 | th | /t/ |  | - |  |
| 6 | t | /t/ |  | - |  |
| 7 | d̊ | /d/ |  | - |  |
| 8 | d | /d/ |  | - |  |
|  | - |  | 5 | t̪ | /т/ |
|  | - |  | 6 | t̪j | /т’/ |
|  | - |  | 7 | d̪ | /д/ |
|  | - |  | 8 | d̪j | /д’/ |
| Velar stops | 9 | kh | /k/ |  | - |  |
| **10** | **k** | **/k/** | **9** | **k** | **/к/** |
| 11 | khj | /k/ |  | - |  |
| **12** | **kj** | **/k/** | **10** | **kj** | **/к’/** |
| 13 | g̊ | /g/ |  | - |  |
| 14 | g̊j | /g/ |  | - |  |
| **15** | **g** | **/g/** | **11** | **g** | **/г/** |
| **16** | **gj** | **/g/** | **12** | **gj** | **/г’/** |
| Labial fricatives | **17** | **f** | **/f/** | **13** | **f** | **/ф/** |
| 18 | v̥ | /v/ |  | - |  |
| **19** | **v** | **/v/** | **14** | **v** | **/в/** |
|  | - |  | 15 | fj | /ф’/ |
|  | - |  | 16 | vj | /в’/ |
| Coronal fricatives | 20 | s | /s/ |  | - |  |
| 21 | z̥ | /z/ |  | - |  |
| 22 | z̥ | /z/ |  | - |  |
| 23 | ʃ | /ʃ/ |  | - |  |
| 24 | ʒ̊ | /ʒ/ |  | - |  |
| 25 | ʒ | /ʒ/ |  | - |  |
|  |  |  | 17 | s̪ | /с/ |
|  |  |  | 18 | s̪j | /с’/ |
|  |  |  | 19 | z̪ | /з/ |
|  |  |  | 20 | z̪j | /з’/ |
|  |  |  | 21 | ȿ | /ш/ |
|  |  |  | 22 | ɀ | /ж/ |
|  |  |  | 23 | ɕː | /щ/ |
| Palatal fricatives | 26 | ç | /ç/ |  | - |  |
| Velar fricatives | **27** | **х** | **/x/** | **24** | **х** | **/x/** |
| 28 | χ | /x/ |  | - |  |
|  | - |  | 25 | хj | /х’/ |
| Glottal fricatives | 29 | h | /h/ |  | - |  |
| Labial affricates | 30 | p͜f | /p͜f/ |  | - |  |
| Coronal affricates | 31 | t͜s | /t͜s/ |  | - |  |
| 32 | t͜ʃ | /t͜ʃ/ |  | - |  |
|  | - |  | 26 | t̪s̪ | /ц/ |
|  | - |  | 27 | t̪ɕ | /ч/ |
| Sonorants |
| Nasal bilabial stops | 33 | m | /m/ | 28 | m | /м/ |
|  | - |  | 29 | mj | /м’/ |
| Nasal coronal stops | 34 | n | /n/ |  | - |  |
|  | - |  | 30 | n̪ | /н/ |
|  | - |  | 31 | n̪j | /н’/ |
| Nasal velar stops | 35 | ŋ | /ŋ/ |  | - |  |
| 36 | ŋj | /ŋ/ |  | - |  |
| Laterals | 37 | l | /l/ |  | - |  |
|  |  | - |  | 32 | lɣ | /л/ |
|  |  | - |  | 33 | lj | /л’/ |
| Palatal approximant | **38** | **j** | **/j/** | **34** | **j** | **/j/** |
| Vibrants | 39 | R | /R/ |  | - |  |
|  | 40 | ʁ̥ | /R/ |  | - |  |
|  | 41 | ɐ | /R/ |  | - |  |
|  | - |  |  | 35 | rɣ | /р/ |
|  | - |  |  | 36 | rj | /р’/ |

On the next stage, we identified which allophones in both sound systems can be considered *analogous sounds*, and which allophones can be regarded as *similar sounds*. Analogous sounds are phoneme realizations in L1 and L2 having the same phonetic content in both languages, so that they can be transcribed by means of the same IPA symbol. However, it should be fully realized that such phonetic analogy is of approximate nature. Two sounds taken from two different languages are never truly analogous even if they are phonetically very close to each other – owing to inevitable differences in articulation base. Thus, analogy in this case is just a convention, but one has to fall back on this convention in order to discover the regularities acting in perceptual and articulatory mechanisms of bilingual speakers. We suggest that only a small part of consonant allophones in Russian and German can be regarded as analogous sounds, i.e. [p], [b], [k], [kj], [g], [gj], [f], [v], [x], [m], [j] (see Table 1 – analogous sounds are highlighted). However, this figure does not speak a lot. Rather, it would be interesting to compare this criterion (i.e. the number of analogous sounds in an L1-L2 pair) for many such pairs (Russian – English, Russian – French, Russian – Spanish, …, German – English, German – French, German – Spanish etc.), thus scaling the languages according to their “relative phonetic nearness” to German or Russian.

Numerous phoneme realizations in Russian do not have an analogous counterpart in German, and vice versa. For instance, Russian palatalized consonants do not have an analogue in German. This fact does not mean that Germans cannot speak Russian – they would just tend to use non-analogous replacements for those Russian sounds that do not have analogous counterparts in their mother tongue. The sounds they eventually produce may be phonetically rather far from their Russian originals. The research of analogous sounds in contrasted languages is thus only a preliminary analysis stage, as it does not suffice to predict possible negative transfer substitutions. In order to get an idea of all (or, at least, the majority of) typical interference substitutions a bilingual person makes when speaking L2, allophone variation in L1 should be fully analyzed, which means going far beyond just finding analogous sounds. If an L1 native speaker replaces an L2 sound with an L1 sound, and the two sounds cannot be considered analogous, such two sounds can be called *similar sounds*. In order to find out which L1 sounds are used in foreigner speech for replacing L2-sounds, L1 allophones with their phonetic contexts have to be closely analyzed. In other words, to predict substitutions a bilingual person makes when speaking a foreign language, it is necessary to analyze allophone variation in their mother tongue.

A bilingual person may as well implement more complicated substitutions when an L2-sound is replaced by a sequence of L1 sounds. E.g., Russian palatalized consonants are often replaced by a “non-palatalized (or semi-palatalized) consonant + [j]” combination in bilingual speech. This type of replacements should also be taken into account when carrying out CLA.

Finally, on the last analysis stage of our research, all forecasted allophonic substitutions were noted in conformity with the following scheme:

|  |  |  |
| --- | --- | --- |
| L2 sound🡪 | L1 substitute (an analogous sound, a similar sound or a sequence of L1 sounds)  | substitution context (phonetic position) |

Further, each forecast substitute scheme as shown above was also provided with a number of common L2 words, in which the forecasted mistake is highly probable. The words have to be familiar to bilingual speakers even on initial level of L2 proficiency since they are intended for use on the last CLA stage, i.e. experimental verification.

**3.3. Experimental verification of CLA results**

Verification appears to be an indispensable stage since otherwise we would actually come to the CLA version identical to those early CLA attempts that did not prove groundbreaking as long as some 40 years ago. Only an *experimental* check of an entirely *theoretical* CLA forecast can *actualize* it by sorting out those predicted elements that do not manifest themselves in real foreigner speech. In this research, verification is a planned stage.

The planned verification (or, rather, the first one in a row of planned verification schemes) involves receiving samples of foreigner speech from a sensible number of informants based on questionnaires with the lexical units in question omitted. E.g., the following example sentences can be included with the questionnaire form for Russian native speakers learning German: «Wohin gehst du? – Ich gehe in den \_\_\_\_\_\_\_\_\_\_\_ (парк)», «Wie fährst du zur Arbeit? – Mit der \_\_\_\_\_\_\_\_ (метро)». Since the sentences do not provide graphical form of the omitted words (Park, U-Bahn), informants cannot read them and are thus forced to extract them from memory in order to pronounce. To ensure this important condition, only common lexis should be used, i.e. words familiar to informants in line with their level of L2-proficiency.

It should be fully realized that the experimental forecast check as described above is to some extent of “laboratory-based”, or artificial, nature because the informants are supposed to read sentences from questionnaires rather than speak in natural conditions. However, this type of verification offers a very important advantage of directionality, i.e. only relevant data are included with the questionnaires. Such approach enables the researcher to verify negative transfer forecast results within a short period.

Subsequently, frequencies of the substitutes predicted based on contrastive analysis will be evaluated. The resulting frequency scale might be used as a basis for creating a new type of practical manuals of German phonetics for Russians, and vice versa, as described above (see 2.3).

**4. CLA of German vs Russian consonantisms: resulting forecasts**

As a result of the CLA applied to consonant systems of Russian and German, a detailed list of negative transfer substitutions was made up, according to the above scheme (see 3.2). The list presumably contains *all* typical Russian-German, and vice versa, negative transfer substitutions in the consonant area. However, the forecast has not been verified yet; verification is being planned (see 3.3).

Logically, when applying CLA to an L1-L2 pair, there are only two conceivable situations: an L2 sound does not have an analogue in L1, or it does have one. In the former case, an L1 native speaking L2 is bound to make use of an L1 sound which they consider close, or similar, to the L2 sound. The problem is, however, that no criteria of such closeness have ever been developed or described. That is exactly the point of *theoretical* forecasting where *empirical* data can come in handy. A good example is the [ç] German allophone: there is no analogous sound in Russian. Thus, in order to predict which Russian sound will be most probably employed as its substitution, empirical observations made by Russian teachers of German should be involved. As far as the German [ç] is concerned, it is well known that Russians tend to substitute a palatalized velar fricative ([xj] or [x’] in Cyrillic notation) or a coronal fricative ([ɕ] or [щ:]) for the German [ç]. Subsequently, the substitutions in question are described in this CLA version as follows (Table 2).

**Table 2.** Substitutes of German palatal fricative in speech of Russian native speakers

|  |  |  |  |
| --- | --- | --- | --- |
| **Allophone** | **Substitutes** | **Context** | **Examples** |
| **[ç]** | **→ [х]/[хj]/[ɕ]** | not before a vowel (end-of-word/before a consonant) | *i****ch****, di****ch****, fur****ch****tbar* |
|  | **→ [хj]/[ɕ]** | in other positions (before a vowel) | ***Ch****ina, Mäd****ch****en,* ***Ch****emie* |

Another example of such phonetic dissymmetry is Russian palatalized consonants. As described above (see 3.1 and 3.2), the German would replace them with non-palatalized consonants or semi-palatalized consonants, or with a “non-palatalized (or semi-palatalized) consonant + [j]” sequence. Table 3 depicts forecasting for the Russian [mj] sound (or [м’] in Cyrillic notation) as an example.

**Table 3.** Substitutes of Russian palatalized nasal bilabial stop in speech of German native speakers

| **Allophone** | **Substitutes** | **Context** | **Examples** |
| --- | --- | --- | --- |
| **[mj]** | **→ [m]/[m̟]** | end-of-word | *се****мь****, восе****мь****, Пер****мь*** |
| **→ [m]/[m̟]/[mj]** | in other positions | ***м****есто, до****м****ик, и****м****я*  |

The other option, i.e. when an L2-sound has an analogue in L1, is not homogeneous. The situation when an L1 sound is used to replace its L2 analogue in all existing L2 contexts is an extremely rare case. If anything, the only example of that in the Russian-German language pair is the [j] sound, as seen in Tables 4 and 5.

**Table 4.** Substitutes of Russian palatal approximant in speech of German native speakers

| **Allophone** | **Substitutes** | **Context** | **Examples** |
| --- | --- | --- | --- |
| **[j]** | **→ [j]** | in all positions | ***я****,* ***е****сть, по****ю****т* |

**Table 5.** Substitutes of German palatal approximant in speech of Russian native speakers

|  |  |  |  |
| --- | --- | --- | --- |
| **Allophone** | **Substitutes** | **Context** | **Examples** |
| **[j]** | **→ [j]** | in all positions | ***j****a,* ***J****ahr,* ***J****uni* |

In a much more frequent case, an allophone is present in both consonantisms, but substitution patterns in L2 are intricate as they are fully determined by allophonic variation in L1, not L2. E.g., it would be most natural to presume that a German would substitute the German non-aspirated [p] for its Russian analogue, as the German /p/ phoneme does have a non-aspirated allophone and it is phonetically most close to the Russian [p], or [п], if Cyrillic notation is used. However, it is well known from teaching practice that Germans tend to pronounce German aspirated [ph] in Russian words – a sound altogether alien to the Russian sound system. In order to predict, in which Russian words a German would most probably pronounce an aspirated stop, allophonic variation of the /p/ phoneme in German is indispensable. The aspiration in German is strongest before a stressed vowel when /p/ is not preceded by a fricative within the same word (e.g. *Spaß* [ʹʃpa:s] ‘fun’), for instance, in such words as *passen*, or *Park* (CAIPA 1999). Against this background, one can suggest that the Russian non-aspirated [p] would most probably be replaced with the German aspirated [ph] allophone in the first place in similar positions, i.e. in such words as ***п****адать* ([ʹpadɐtj]‘to fall’) or ***п****ыль* ([ʹpɨlj]‘dust’), but not in the word *с****п****ать* ([ʹspatj]‘to sleep’), where /p/ is preceded by a dental sibilant. As a result, a rather intricate substitution pattern for Russian /p/ is forecasted, as depicted in Table 6.

**Table 6.** Substitutes of Russian voiceless bilabial stop in speech of German native speakers

| **Allophone** | **Substitutes** | **Context** | **Examples** |
| --- | --- | --- | --- |
| **[p]** | **→ [ph]** | in the absolute beginning of a stressed syllable before a vowel or a sonorant; intervocalically after a stressed and before an unstressed vowel; at the absolute end of word after a stressed vowel | ***п****а****п****а,* ***п****лохо, глу****п*** |
| **→ [p]** | in other positions | *с****п****ать, ш****п****ага,* ***п****алатка* |

A far less frequent case concerns allophones, which, being present in L2 and belonging there to the pool of main system allophones, lie, as it were, on the periphery of the L1 sound system. A good example of this is the [ŋ] sound. It is present in German, and it is not quite alien to the phonetic system of Russian as well, but there *some* speakers pronounce it only sporadically due to coarticulation in *some* words, e.g. *функция* ([ʹfuŋkijɐ] ‘function’). However, Russian native speakers have problems trying to pronounce the sound disconnectedly, as stated in (Kniazev and Požarickaja: 2012). For this reason, the Russian [ŋ] cannot be ranked among main system allophones – it is undoubtedly a peripheral, sporadic, context- and speaker-dependent one. When trying to pronounce the German [ŋ] intervocalically or in the word final position (e.g., in *Ring* or *ringen*), even if they cope with the [ŋ], Russians learning German would most probably add a [k] or [g] sound since the [ŋ] allophone in Russian is always followed by either. Furthermore, pronouncing German [ŋ] as a [ŋg] or [ŋk] sequence isn’t presumably the most “preferred” negative transfer option – Russians would tend to substitute [ng] or [nk] for it, hence the forecast in Table 7.

**Table 7.** Substitutes of German [ŋ] in speech of Russian native speakers

|  |  |  |  |
| --- | --- | --- | --- |
| **Allophone** | **Substitutes** | **Context** | **Examples** |
| **[ŋ]** | **→ [n̪]/[ŋ]** | in *«nk»* orthographic sequence | *da****nk****e, Ba****nk****, Gesche****nk*** |
| **[ŋ]** | **→ [n̪k]/[ŋk]** | at word end, before a voiceless consonant (fortis) | *Sammlu****ng****, (er) fä****ng****t an, la****ng*** |
|  | **→ [n̪g] /[ŋg]** | in other positions | *la****ng****weilig, Ta****ng****o, Hu****ng****er* |

**5. Conclusion**

This paper represents essential features of contrastive linguistic analysis applied to German and Russian consonant systems in an effort to predict negative transfer pronunciation mistakes made by Russians speaking German, and vice versa.

The CLA procedure included steps as follows:

1. Inventorying phonemes and system allophones.
2. Finding analogous sounds in both languages in question.
3. Making up a full-scale forecasting of substitutions in foreigner speech.

CLA was developed in 1950-60s as a purely theoretical approach, which now appears to be rather a fallacy than an advantage. Empirical data of various sorts might turn out to be useful, be it teaching experience summarized in books on phonetics, or instrumental analysis (radiography, spectrograms, oscillograms, etc). When making a CLA, a researcher keeps encountering special problems of all sorts that cannot be solved by juxtaposing allophone inventories of the languages in question – versatile empirical data are necessary for the purpose. Thus, adhering to the CLA procedure as described above and using all available data on empirical research should be considered cornerstones of CLA as we understand it.

The result of the CLA is an array of tables representing negative transfer forecast (see Tables 2-6 above for examples). The tables comprise all existing L2 contexts giving the most probable L1 substitution(s) for each. Subsequent to the results of the currently planned forecast verification, those forecasted substitutions that do not occur in real foreigner speech will be discarded. The rest of substitutions can be scaled and used as a theoretical basis for creating new-type manuals on L2 phonetics.

**List of abbreviations**

CLA = Contrastive Linguistic Analysis, FLT = Foreign Language Teaching, IPA = International Phonetic Alphabet

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