

## Chapter 1

### The Concept of Interference

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Language contact takes place between speakers of different languages in contact situations. In order for communication to take place, speakers must arrive at a certain degree of comprehension of the other language and must acquire a degree of facility in producing utterances that will be comprehensible. In time, some speakers will be able to alternate between languages; they have become bilingual.

Frequently a person is considered bilingual if he can speak both of his languages in such a way that he cannot be distinguished from monolingual speakers of either language. This would be the ideal case, and it will be explained later why such cases are extremely rare. It is more realistic to allow for a wider range of facility with the two (or more) languages involved in the contact situation. The theoretical limits to bilingualism might be drawn to encompass the range between the person who uses one nonintegrated loanword and the so-called perfect bilingual who can pass for a monolingual in more than one language. For the moment I would like to define a *bilingual* as a person who is able to produce grammatical sentences in more than one language.

There are, nevertheless, degrees of correctness (if correctness is defined as perfect compliance with the norms of a language) in the production of these sentences by a bilingual. *Interference* frequently takes place, defined here as deviations from the norms of either lan-

guage that occur in the speech of bilinguals as a result of their familiarity with more than one language.

Interference can be found at all levels: phonetics, phonology, morphology, syntax, semantics, and lexis. There are, of course, also degrees of interference. A perfect bilingual may switch from language to language during a conversation. This phenomenon is called *code switching*; again, in the ideal case all aspects are switched simultaneously. More frequently a certain degree of interference accompanies code switching. A sequence of steps often takes place: (1) A bilingual introduces a loanword from language A into language B in a phonetic form close to the norm of language A. (2) If the bilingual has occasion to repeat it, or if other speakers also begin using it, elements of language B will be substituted for those of language A. (3) If monolinguals learn the loanword, a total or practically total substitution will be made in the sound structure, and the word will be integrated into the grammar as well.

### **Phonic Interference**

*Phonic interference* occurs when a bilingual perceives and reproduces the sounds of one language (the secondary language, language B) in terms of his primary language (language A). Interference arises when the bilingual identifies a phoneme of the secondary language with a phoneme of the primary language and, in reproducing it, subjects it to the phonetic rules of the primary language.

The most obvious kind of phonetic interference is *sound substitution*. This arises when phonemes that are identically defined in two languages have different phonetic realizations, and when the pronunciation of language A is carried over into language B. It is this kind of interference that is commonly referred to as *foreign accent*. For example, the phoneme /t/ is found in Slavic languages as well as in English, but in Slavic languages /t/ is normally dental (articulated with the tip of the tongue against the inner surface of the upper front teeth), whereas in English /t/ is normally alveolar (articulated with the

tip of the tongue against the alveolar ridge). In Slavic languages the phoneme /r/ is realized as a tongue-tip trill, whereas in American English /r/ is a retroflex continuant.

There are situations in which language A lacks a phoneme of language B, or in which language A has one phoneme, whereas language B has two phonemes, both of which bear some phonetic similarity to the phoneme present in language A. Interesting observations can be made regarding the sound substitutions chosen by speakers of the borrowing language. We assume that the speakers will try to substitute the sound that seems to them to be the "closest" sound to the one they are trying to match. Sometimes the substitutions are not at all obvious to speakers of other languages. For example, English has the phonemes /θ/ and /ð/, which are not found in French and Russian. Both French and Russian have the phonemes /s/, /z/, /t/, and /d/. Speakers of French choose /s/ and /z/ as substitutes for English /θ/ and /ð/, whereas speakers of Russian choose /t/ and /d/. To use conventional spelling, English *think* and *them* would be pronounced somewhat like *sink* and *zem* by a monolingual speaker of French and somewhat like *tink* and *dem* by a monolingual speaker of Russian. Both French and Russian use dental /t/-sounds; English /θ/ is an interdental fricative. Speakers of French have kept the fricative feature, whereas speakers of Russian have evidently considered that feature relatively unimportant. The answer to the puzzle may come from a comparison of the sound systems of all three languages.

Another example of substitution that may seem counterintuitive to a speaker of English may be found in the realization of English /t/ in Hindi. As noted, English /t/ is alveolar. Hindi lacks an alveolar consonant series, but it has a dental series and a retroflex series of stops. Speakers of Russian use their dental /t/ to realize English alveolar /t/; speakers of Hindi, however, choose their retroflex stop rather than the dental one to render the alveolar /t/ of English loanwords. They perceive English /t/ as resembling their own retroflex stop more than their dental stop.

Similar to sound substitution in its effects is the *transfer of rules*

from one language to another. For example, German has a rule of final devoicing, according to which word-final (and in most cases morpheme-final) voiced obstruents are phonetically realized as their voiceless counterparts. English lacks such a rule. Speakers of German frequently carry this rule over when they pronounce English words such as *have* with a final [f], and they may be misunderstood as having said *half*. Failure to apply a rule that is required in a language by speakers of a language that does not have this rule is another source of foreign accent. For example, English has a rule requiring a syllable nucleus to be lengthened before a voiced final consonant within the same syllable; German does not have such a rule. Speakers of English can form a verb from the noun *house*—namely, *to house*—by voicing the final /s/ and lengthening the diphthong (substituting /z/ for /s/ and thus triggering the application of the lengthening rule). I have heard a speaker of German produce the verb *to house* with a voiceless final consonant and with no lengthening. (It remains uncertain whether the speaker intended to produce the English version of *to house* and failed to apply the rules, or whether he simply assumed that *house* can be turned into a verb without any phonetic modification.)

Another example of rule transfer resulting in perceived foreign accent might be the case of Slavic regressive voicing assimilation in obstruent clusters carried over into English. This rule applies to consonant clusters consisting of fricatives and plosives; the whole cluster acquires the voicing feature from its last member. A speaker of a Slavic language is likely to pronounce English phrases and compounds like *back down* and *ragtag* as *bag down* and *racktack*, respectively (many Slavic languages, including Russian, have a final devoicing rule similar to that of German). This particular rule is very persistent and may sometimes be observed even in the speech of second generation speakers of American English who have Slavic family background.

Other types of phonic interference involve mostly phonemic interpretations. The most important of these is *underdifferentiation*. Underdifferentiation is likely to take place when language A lacks a

contrast that is present in language B: two sounds are confused in the secondary system, if their phonetic counterparts are not distinguished in the primary system. Expressed in other terms, underdifferentiation will occur when two sounds that are allophones of a phoneme in language A are separate phonemes in language B. Underdifferentiation may also be due to different phonotactic rules in the two languages.

An example of the latter kind of interference may be found in comparing English and Spanish. English has no restrictions on the occurrence of nasals in final position: *-m#*, *-n#*, and *-ŋ#* are all possible. Spanish has only *-n#*, and speakers of Spanish have considerable difficulty in identifying and pronouncing final nasals when they are learning English. Other examples of underdifferentiation may be found in comparing Germanic and Finno-Ugric languages. English distinguishes between [s] and [ʃ]; Finnish has only one voiceless sibilant, which is phonetically roughly intermediate between the two sounds occurring in English. Speakers of Finnish continually make mistakes in English sibilants. Germanic languages also possess a voicing correlation in consonants (for example, English and German distinguish between /g/ and /k/ in initial position); Balto-Finnic languages lack the correlation. A speaker of Estonian will have great difficulty in learning the systematic distinctions between voiced and voiceless consonants (for example, German *Garten* 'garden' versus *Karten* 'cards').

Underdifferentiation contributes strongly to a perceived foreign accent. *Overdifferentiation*, on the other hand, is not normally perceived by listeners, even though the speaker may be overdifferentiating in production. Overdifferentiation is the imposition of phonemic distinctions from the primary system on the sounds of the secondary system. In other words, allophones of the secondary system are treated as phonemes because they are phonemes in the primary system.

For example, both Spanish and English possess the sounds [d] and [ð]. In English they are distinct phonemes; in Spanish they are allophones of a single phoneme, [ð] occurring in intervocalic position,

[d] in initial position and in intervocalic clusters following [n]. Speakers of English identify the two Spanish sounds with their phonemes /d/ and /ð/; they simply must learn the rules for the occurrence of the two phonemes. Speakers of Spanish, on the other hand, are likely to underdifferentiate: identifying the English sounds with the allophones of their single phoneme, they will apply the distribution rules that are found in their primary language.

Another kind of phonic interference is *reinterpretation of distinctions*. This type of interference takes place when the bilingual distinguishes phonemes of the secondary system by features that are distinctive in his primary system but are merely concomitant or redundant in the secondary system. For example, German has long and short vowels; there is a vowel quality difference in some of the short-long pairs, but it is the length that distinguishes between the two sets of vowels. English has no systematic length distinctions in its vowel system, although some vowels may be intrinsically long and others intrinsically short. There is a vowel quality difference between intrinsically long and intrinsically short vowels produced at similar articulatory positions. Phonetically, the vowels in the German words *bieten* 'to offer' and *bitten* 'to request' are quite similar to the vowels in the English words *beat* and *bit*; in the German system this phonetic difference is redundant, whereas in the English system the length difference is redundant. Speakers of English may identify the German vowels by their phonetic quality rather than by their distinctive length.

On the other hand, English has a voicing distinction in final consonants, and vowel length depends on the presence or absence of voicing: *bead* has a longer vowel than *beat*. German has a final devoicing rule that neutralizes the distinction in final position; speakers of German may interpret the vowel length, which is a dependent variable in English, as phonemic.

*Phonotactic interference* was already mentioned as one cause of underdifferentiation. Phonotactic interference occurs when distributional restrictions of language A are carried over into language B. As

an example, let us look at the treatment of loanwords from Slavic and Germanic into Finnish and Estonian. Indo-European languages have many words with initial consonant clusters; Finnic languages tolerate only a single initial consonant. Thus, an early loan from a Germanic word that survives in English as *strand* appears in Finnish and Estonian with a simplified initial cluster: *ranta* and *rand*, respectively. The early Slavic word *gramota* 'book' (from Greek *grammata* (pl.)) appears in Finnish as *raamattu* and in Estonian as *raamat*. (Incidentally, the treatment of initial clusters may serve to establish the relative age of loanwords, since later loanwords appear in Estonian with their initial clusters intact: German *Glas* 'glass' gives Estonian *klaas*, whereas in the more conservative Finnish, which continues to apply the old phonotactic rule, the loanword has the form *lasi*.)

Interference may also be observed in the treatment of suprasegmental features like tone, stress, and quantity, the last of which was already discussed in connection with the English and German vowel systems. The observations made above concerning types of interference also apply to suprasegmental systems. A speaker of a language without lexical tone is likely to underdifferentiate in producing words from a tone language and in learning to understand a tone language. Reinterpretation of distinctions frequently takes place: a syllable with high pitch can be heard as stressed by a speaker of a language in which heightened fundamental frequency is a phonetic characteristic of stressed syllables. Falling fundamental frequency is a phonetic feature of overlong syllables in Estonian; I have heard speakers of tone languages identify such overlong syllables with the distinctive falling tone of their own language.

Phonotactic interference can also be observed. Hungarian, for example, has initial stress, whereas German words are normally stressed on the first syllable of the stem; Hungarian accent is imitated in Vienna by shifting the stress to the initial syllable of every German word. Czech has initial stress, whereas Russian has movable stress; since the two languages are closely related, many Russian words have easily recognizable Czech counterparts. Speakers of Czech are likely

to produce almost random stresses in speaking Russian, with one interesting modification: they tend to avoid initial stress, recognizing that initial stress is a Czech characteristic. This leads to *hypercorrection*, a phenomenon that plays a considerable part in situations involving language contact.

Phonic interference can be studied experimentally. As examples of the kinds of research that can be performed to investigate this aspect of language contact, let us consider a sequence of studies dealing with the production and perception of initial plosive consonants by monolinguals and bilinguals.

Cross-language studies have shown that voice onset time is a sufficient cue to separate initial stop consonants into phonemic categories. The experimental technique involves asking listeners to identify whether each of a series of stimuli contains a voiced or a voiceless plosive. In a large number of studies these stimuli have been synthetic monosyllables beginning with an initial plosive. The voice onset time has been systematically varied, so that the onset of periodicity (corresponding to the onset of vocal fold vibration) either precedes the release of the plosive consonant or follows it in calibrated steps. In one set of experiments (labeling tests) the listeners must identify the initial consonants of stimuli presented one at a time; in another set of experiments (discrimination tests) they must judge whether the members of a pair of stimuli are the same or different. We are currently concerned with the labeling task. Experiments have shown that listeners who are native speakers of English label stimuli as containing a voiced initial plosive when the onset of voice takes place at time intervals shorter than 25 msec after the release and as containing a voiceless initial plosive when the onset of voice takes place later than that. On the other hand, listeners whose native language is French or Spanish partition the continuum at a much shorter voice onset time; they label plosives with more than approximately 5 msec voicing delay as "voiceless."

A series of studies has been carried out with monolingual speakers of French, English, and Spanish, and with English-French and



English-Spanish bilinguals, to explore whether there is interference from one or the other language in the production and perception of voiced and voiceless initial plosives by bilinguals, and to establish whether there exist systematic differences between monolinguals and bilinguals in this regard.

Caramazza et al. (1973) studied both production and perception, using three groups of subjects: 10 monolingual Canadian French speakers, 10 monolingual Canadian English speakers, and 20 bilingual French-English speakers for whom French was the first or dominant language. Each testing session began by having the subject read aloud a set of English or French stop-initial words containing either of two members of a voiced-voiceless pair (for instance, *papillon-ballade*). The readings were recorded on tape and later analyzed acoustically; voice onset time was measured from spectrograms. After having produced the words, each subject was presented with a randomized sequence of synthesized monosyllables beginning with a plosive consonant and was asked to label the syllables as /ba/ or /pa/, /da/ or /ta/, or /ga/ or /ka/. The monolingual subjects read three sets of words and labeled each of the three stop continua. The bilingual subjects were tested twice, once in an English setting, with instructions in English, and once in a French setting. They thus produced six sets of words, three sets in English and three sets in French; they also labeled each of the three stop continua twice.

The results for the two monolingual groups confirmed existing knowledge: the English speakers produced aspirated voiceless plosives (with a relatively long voice onset time), and the French speakers produced unaspirated voiceless plosives, their voice onset taking place immediately after the release of the initial consonant. In perception, too, the two groups differed in a predictable manner: there was a statistically significant difference in the crossover points of the labeling functions for the two groups, and the crossover point was closer to the consonant release for the French group.

It is of course the bilinguals who are of interest in the present context. When they were producing French words in a French setting, the

bilinguals (who had all learned French as their first language) matched the monolingual French group; there was no statistical difference between the two groups, and there was also no evidence of phonological interference from their second language, English. However, when they were producing English, their speech was not completely free of interference from French. This appeared, interestingly enough, in their production of voiced plosives rather than in their production of aspirated voiceless ones. The bilinguals had evidently learned to produce the aspiration in voiceless plosives, and they matched the performance of monolinguals in that respect. Initial voiced plosives are usually voiced for their whole duration in the speech of native speakers of French; what is phonemically a voiced plosive in English need not be so phonetically, and many speakers of English do not start voicing until immediately after the release of the plosive. The bilinguals carried over their French pronunciation habits into the production of English voiced plosives.

With respect to perception, the bilinguals appeared to make no distinction between the two languages: the crossover points for both curves were intermediate between the crossover points of the monolingual French and monolingual English speakers, and the two curves had similar shapes. The data thus show that language switching in bilinguals is well controlled for production but poorly controlled for perception at the phonological level.

Very similar results were obtained by Williams (1977) in her study of the perception of stop consonant voicing by Spanish-English bilinguals. She used eight bilingual subjects, who carried out labeling and discrimination tasks listening to stimuli taken from a synthetic speech continuum varying in voice onset time. Each subject also produced 16 examples of word-initial voiced and voiceless labial plosives in each language. The procedure was carried out in Spanish for one set of trials and in English for another set. The labeling performance of bilinguals was compared with that of Spanish and English monolinguals from a prior study (Williams 1974). The performance of the bilingual group on perception tasks differed from that of both mono-

lingual groups; the bilinguals' production in their two languages conformed with results obtained from each monolingual group. Williams suggests that even though the bilingual may have the ability to distinguish perceptually the phonemic contrasts in both of his languages, he does not use the same acoustic properties as perceptual cues for a given contrast as does a monolingual speaker. Becoming bilingual may thus entail, among other things, a modification in the use of acoustic information present in the speech signal.

Elman, Diehl, and Buchwald (1977) criticize these two studies from the point of view of methodology. They focus on the fact that in the studies by Caramazza et al. and Williams the bilingual boundary did not differ according to the language used in conducting the session. Varying the language of the experimental instructions and of the pre-experimental conversation had no effect whatever on the placement of the voiced-voiceless boundary. Elman, Diehl, and Buchwald argue that the use of synthetic speech may have made it difficult to maintain a "language set." Furthermore, there had been a delay of several minutes between the set-inducing instructions and the actual presentation of the stimuli; there is some evidence from earlier studies that contextual effects diminish considerably when the interval is increased to 10 seconds and that they are virtually eliminated when this interval is filled with extraneous speech sounds.

The study of Elman, Diehl, and Buchwald was designed to provide a strong test of the hypothesis that the acoustic-to-phonemic mapping is unaffected by higher-order linguistic information and that bilinguals will therefore demonstrate fixed phoneme boundaries despite changes in language set. They used naturally produced test syllables; their test tapes included natural filler words along with the nonsense syllables, and each item was immediately preceded by a language-appropriate instruction to "write the word."

Two test tapes were prepared, each including exactly the same test syllables. On one of the tapes the filler words and the precursor sentences were in English; on the other the filler words and the precursors ("escriba la palabra") were in Spanish. All materials were spoken by

the first author, who is a bilingual. Each tape contained 40 different filler words and 10 copies each of five different test syllables, all items being randomized. The five syllables had measured voice onset time values of  $-69$ ,  $+15$ ,  $+19$ ,  $+26$ , and  $+66$  msec. In a pilot study both monolingual English speakers and monolingual Spanish speakers uniformly identified the  $-69$  msec stimulus as /b/ and the  $+66$  msec stimulus as /p/. The three intermediate stimuli were ambiguous: English monolinguals heard them primarily as /b/, and Spanish monolinguals heard them primarily as /p/.

Three groups of subjects served in the experiment: 12 monolingual English speakers, who were presented with the English test tape; 11 monolingual Spanish speakers, who were presented with the Spanish test tape; and 31 English-Spanish bilinguals, who were presented with both tapes, on separate days.

The results were predictable for the two monolingual groups and for the two extreme stimuli for the bilingual group. Of interest were the responses of the bilinguals to the three ambiguous stimuli. As a group, these subjects reliably identified more of the test syllables as /ba/ when listening to the English tape than when listening to the Spanish tape. Furthermore, different degrees of bilingualism were reflected in the results. Of the 31 bilingual subjects, 15 were rated as strong bilinguals, 6 as moderate, and 10 as weak. The identification shift (as a function of linguistic set) was small and statistically insignificant for the moderate and weak bilingual subjects, whereas it was relatively large and significant for the strong bilinguals. The 5 subjects who received the highest bilingual rankings showed a very considerable shift, although their averages remained short of monolingual performance for either language.

The 2 most bilingual subjects demonstrated a virtually complete identification shift in two conditions. The remaining 13 strong bilinguals exhibited essentially monolingual performance in one of the two conditions; in the other language set, the phoneme boundary was shifted toward—but did not reach—the appropriate monolinguals' boundary location.

Elman, Diehl, and Buchwald did not test production; thus, their experiment does not furnish additional information about the bilinguals' ability to keep their two languages apart in production. The experiment does, however, provide strong support for the notion that for most bilinguals, the two languages interfere with each other in perception.

### **Grammatical Interference**

*Grammatical interference* parallels phonic interference: interference takes place when elements of language B enter language A and are gradually grammatically integrated, or when a speaker of language A starts to speak language B and carries over elements of A into B. There are degrees of grammatical integration, just as there are degrees of phonic integration. We will consider both morphological interference and syntactic interference.

Interference is likely to take place when the two languages have different grammatical categories. In morphological integration, a word borrowed from language B into language A must be assigned grammatical categories that are characteristic of language A. Consider, for example, the grammatical category of gender associated with nouns. In a contact situation involving English on the one hand and Norwegian or German on the other hand, English nouns incorporated either into Norwegian or German must be assigned grammatical gender, since gender is an obligatory category in both languages. English lacks grammatical gender, although it possesses natural gender (it makes a distinction among masculine, feminine, and neuter in personal pronouns). Haugen (1969) discusses the process of gender assignment in American Norwegian. In the Norwegian spoken in Norway approximately 49.3% of all nouns are masculine, 24.0% are feminine, and 26.7% are neuter. In American Norwegian the feminine has virtually disappeared. All new nouns become masculine unless they are associated with a homophonous feminine or neuter morpheme or a female living being. Haugen believes that this technique

of borrowing had already been established before emigration, in other words, that loanwords were normally made masculine. American Norwegian also shows a high degree of vacillation. In Haugen's study 18.7% of all noun stems showed more than one gender. By coincidence, this is the percentage of vacillation in the gender of English loanwords in standard German.

In Australian German, on the other hand, a "feminine tendency" prevails (Clyne 1972). Clyne attributes this to the similarity between the feminine definite article (*die*) in German and the accented form of the definite article in English. Thus, English loanwords entering Australian German became predominantly feminine: *die Buggy, die Fence, die Road, die Yard, die Car*. Similarities in meaning with corresponding German words account for some gender assignments: *das Breakfast* parallels *das Frühstück*, *die Gully* acquires its feminine gender from *die Schlucht*. Either the natural gender of living creatures or the parallel with German *der Hund* accounts for the masculine gender of *der Dog*.

Underdifferentiation appears when language B, which has gender distinctions, is used by a speaker of language A, which does not. It is well known to language teachers that students whose native language is English have difficulties in mastering the gender systems of languages like French and German. The problems of speakers of Finno-Ugric languages like Finnish and Estonian are compounded by the fact that these languages lack gender distinctions even in personal pronouns: Finnish *hän* and Estonian *tema* translate English *he, she, and it*. Frequently the use of the English (or German, or Russian) personal pronouns by speakers of these Finno-Ugric languages is more or less random; listeners ordinarily notice only those instances in which the pronoun is employed wrongly and may arrive at the impression that the speakers systematically reverse the pronouns and refer to males with a feminine pronoun and to females with a masculine pronoun.

In the process of grammatical integration each new word is given case endings according to the inflectional class to which it has been

assigned. Degrees of integration may frequently be observed. For example, a number of French loanwords entered Russian in the nineteenth century, among them the word *paletot* 'overcoat' in the form *pal'to*. The French word is masculine; standard Russian dictionaries list *pal'to* as neuter. In standard usage the word is indeclinable; its neuter gender, however, represents assignment of the word to the large class of neuters ending in stressed *-o* in the nominative singular. I have been informed (personal communication by recent arrivals from Russia) that one now hears the plural form *pol'ta* in colloquial Russian: the morphological integration of the word is apparently complete, and the word is inflected in the same way as, for example, the native word *okno* 'window'.

In the integration of a loanword, plural suffixes are frequently treated as if they were part of the stem, and new plural markers are added: Norwegian *kars* – *karsar* 'cars', German *Keks* – *Kekse* 'cakes', Russian *rel's* – *rel'sy* 'rails', Estonian *props* – *propsid* 'pit-props'. On the other hand, an English final *-n* that is part of the stem may be treated as the postpositive definite article in Norwegian, and a back-formation may result: *pumpkin* enters American Norwegian as *panki*, with a definite form *pankin* and a newly formed plural *pankiar*.

*Syntactic interference* appears when patterns from language A are carried over into language B or when patterns of language B are interpreted in terms of patterns of language A. Interference between English and German word order, for example, is evident in constructions popularly associated with Pennsylvania German: *Throw mama from the train a kiss* or *Throw the baby from the window a cookie*. Relatively more subtle are differences in the ordering of verbal modifiers. In German an adverbial of time precedes an adverbial of place, whereas in English the order is reversed. The German sentence *Er kommt morgen nach Hause* may be turned by a speaker of German into the English sentence *He comes tomorrow home*, with the characteristic German ordering of modifiers and with clearly discernible interference.

Interference may also result in grammatical change within the bor-

rowing language. An example might be the case of Yiddish *ver*, which has been identified with English *who*. Yiddish *ver* is an interrogative pronoun; English *who* has two functions, that of an interrogative pronoun and that of a relative pronoun. Through cross-language identification of these two morphemes, the functions of *ver* have been extended, and *ver* may now be likewise used as a relative pronoun.

An example of an experimental study of syntactic interference is provided by Lehiste (1971). This study attempted to establish the possible difference between native and nonnative speakers with respect to grammatical variability. A currently popular method of teaching elementary syntactic theory involves contrastive presentation of "grammatical" and "nongrammatical" sentences. There is increasing evidence, however, that native speakers do not necessarily agree among themselves about what is grammatical. A concrete problem arises in teaching a syntax course to a group of students including both native and nonnative speakers of the language from which the examples are drawn: nonnative speakers frequently fail to see the rationale for a particular decision concerning whether a sentence is or is not grammatical, if this rationale consists of an appeal to the native speaker's intuition, and if the native speakers do not agree among themselves.

The notion of grammaticality is difficult to define and even more difficult to explain to linguistically naive users of a language. One way to explore the reliability of native speakers' grammaticality judgments would be to compare the actual use of a grammatical feature by a group of monolingual native speakers of English with the use of the same feature by a group of bilinguals for whom English is a second language. The grammatical feature selected for my 1971 study was the formation of tag questions. Langendoen (1970) had presented a set of 91 English sentences to a group of 46 English teachers, all of whom were native speakers of English. I presented the same sentences to a comparable group of 46 Estonian-English bilinguals. The selected feature is very suitable for testing with this group, since Es-



tonian does not know tag questions of the English kind; a statement might be turned into a question by the use of a phrase similar to the German *nicht wahr* or the French *n'est-ce pas*, but even that would not be very common. The educational level of the two groups was comparable, and all bilinguals had had some formal instruction in English grammar, although they were not as familiar with formalized "school grammar" as the monolingual group consisting of teachers of the English language.

In order to establish some measure of the degree of similarity between the two groups, I defined the notion of "deviant response" as a variant of a tag question not included among the set of variants offered by the members of the monolingual group in response to a specific sentence calling for confirmation. A gross comparison of the two sets of 4,186 tag questions yielded 701 deviant responses on the part of the bilinguals, amounting to 16.7% of the total. A separate analysis of the deviant responses of each bilingual subject showed that the number of deviant responses ranged from 1 to 68 (out of 91). Almost half of the deviant responses were furnished by six individuals. The other subjects averaged fewer than 10 deviant responses each. Furthermore, many of the apparent deviations seemed to have no linguistic significance. The monolingual group, being English teachers, had a clear notion of what a tag question is; the bilingual group seemed to have considerable difficulty in grasping what was required of them, and many of their responses suggest that they must have thought they were participating in a free association test. There was also considerable variability among the monolingual subjects: the number of different tag questions formed in response to a sentence ranged from 1 to 8. The bilinguals showed somewhat greater grammatical variability: the number of their responses to one and the same sentence ranged between 2 and 13. If the six individuals who contributed half of the deviant responses were excluded, the difference between the monolinguals and the bilinguals appeared quite small. There were two types of deviant responses that might be considered indicative of interference from Estonian: 5 responses that seem to

translate the Estonian equivalent of *nicht wahr* and *n'est-ce pas*, and 27 pronoun references in which *he* was used for *she* and vice versa. (As noted, Estonian has no grammatical gender and has only one form for the third person pronoun.)

The systematic study of the transfer of elements from language A to language B, when the speaker of A attempts to produce B, is called *contrastive analysis*. The basic assumption of contrastive analysis is that by contrasting the structures of the "source language" (A) and the "target language" (B), one will be able to predict the errors made by learners of the target language, and it will therefore be possible to design teaching materials to take account of the anticipated errors. Mackey (1965) formulated this assumption as follows:

Differential description is of particular interest to language teaching because many of the difficulties in learning a second language are due to the fact that it differs from the first. So that if we subtract the characteristics of the first language from those of the second, what presumably remains is a list of the learner's difficulties.

Complementary to contrastive analysis is error analysis. It should be kept in mind that there are at least two kinds of errors: errors due to interference, and errors due to mistaken generalization of an incompletely learned rule. Errors of the second kind might be made by children learning the language as a first (native) language, whereas errors of the first kind are typical mistakes made by foreigners (although adult learners, too, may commit errors of the second kind).

A series of projects in contrastive analysis has been carried out over the past 20 years. Below are some examples of problems that have been encountered by scholars working on the Yugoslav Serbocroatian-English Contrastive Project between 1967 and 1980 (see Filipović 1975, 1982).

Contrastive analysis predicts that one trouble spot encountered by speakers of one language in learning the other will be demonstratives: English has two forms (*this* and *that*), whereas Serbocroatian has three (*ovaj*, *onaj*, and *taj*). *Ovaj* refers to (masculine) objects that are close both to the speaker and to the interlocutor; *onaj* is remote from

both; and *taj* is remote from the speaker but close to the interlocutor. *Taj* thus translates into English both as *this* and as *that*. Interference may be expected in the use of *taj* by speakers of English and in the use of *this* and *that* by speakers of Serbocroatian. A detailed study was made of the equivalences and mistakes made by both groups of speakers, and a test was devised that can be employed in teaching the proper usage of *this* and *that* to speakers of Serbocroatian. The test consists of checking possible alternations in Serbocroatian: *taj* will have *this* as its English equivalent when it can alternate with *ovaj*, and *that* when it cannot.

A speaker of Serbocroatian produced the following English sentence: *The government was in Austria and in this time Maribor was called Marburg*. The common Serbocroatian expression, which the speaker apparently had in mind, is *u to vreme* 'at that time' (*to* is the neuter form of *taj*). In this expression *to* can alternate with the neuter form of *onaj* but not with *ovaj*: *u ono vreme* would be acceptable, but *u ovo vreme* would not. Correct English usage can be taught by asking the Serbocroatian speakers to test whether the form of *taj* may or may not alternate with a form of *ovaj*. Contrastive analysis correctly predicted the difficulty, and error analysis suggests a pedagogical solution.

### Lexical Interference

*Lexical interference* may result from contact between the vocabularies of two languages. There are various ways in which the vocabulary of one language can interfere with that of another. The introduction of a new word to designate a new concept enlarges the vocabulary and frequently affects the niches occupied by existing words in the broader semantic field to which the new word constitutes a contribution. Some examples of *simple morpheme transfer* into English might be the following: *czar* 'autocratic all-powerful ruler' from Russian, *quisling* 'collaborator with an occupying enemy power' from the Norwegian name Quisling, *coolie* 'laborer performing extremely hard

physical work under conditions of exploitation' from Hindi, *mafioso* 'member of a group engaged in organized crime' from Italian, *sputnik* 'artificial satellite' from Russian, and *kindergarten* 'preschool organized activity for children' from German.

The term *loanshift* is applied to cases in which the meaning of a morpheme in language A is modified or changed on the model of language B. Typical examples of extension of meaning of a morpheme in language A to include the meaning of the same morpheme in language B are the following (Haugen 1950). In Colorado Spanish the word *ministro* 'cabinet member' now also designates a Protestant clergyman, on the model of English *minister*. The German verb *nachschauen* 'to look after' originally applied to a concrete situation; now it has acquired the additional meaning 'to take care of' on the model of the English phrase 'to look after', which has both a concrete and a metaphoric meaning. The German verb *treiben* 'to drive' can now be used to refer to driving a car (*einen Wagen treiben*)—clearly an extension of the original meaning on the basis of the broader meaning of the equivalent English morpheme.

The preceding examples (which could be easily multiplied) constitute instances in which the shift in meaning resulted in an extension. A complete change of meaning, a semantic shift, results from the introduction of loan homonyms. In such cases the new meaning has nothing in common with the old meaning. Thus, *grosseria* in American Portuguese has changed its meaning from 'rude remark' to 'grocery store'; *korn* in American Norwegian now means 'maize' instead of 'grain': *livraria* in American Portuguese means 'library' rather than 'bookstore' (the original Portuguese word for 'library' is *biblioteca*).

An extremely common form of lexical interference is the *loan translation* or *calque*. Examples can be found in practically every language. Thus Latin *impressio* has been translated into German as *Eindruck* and *expressio* as *Ausdruck* (English has resorted to outright borrowing); Latin *paeninsula* has become French *presqu'île*, German *Kindergarten* has yielded Russian *detskij sad*. Sometimes the model

is borrowed rather than the exact morphemes: English *skyscraper* has yielded German *Wolkenkratzer*, which would literally translate a non-existent English word *cloudscratcher*. *Blends* and *hybrids* arise when several processes apply at the same time: a loan morpheme may be filled into native models, one element of a compound may be imported, and so on. Thus, *ground floor* appears in Pennsylvania German as *Grundfloor*, and *plum pie* becomes *Blaumepai*. Loan translations and hybrids are frequently found in proper names and geographical names: *New York* becomes *Neuyork* in German, Afrikaans *Kaapstad* appears in German as *Kapstadt* and in English as *Cape Town*; practically every seagoing nation refers to the *Cape of Good Hope* by a loan translation (for example, German *Das Kap der Guten Hoffnung*, Estonian *Hea Lootuse neem*); the Italian name *Giovanni* is changed to *John* when the Pope bearing the name is referred to in English-language newspapers.

Loanwords experience phonological and morphological/grammatical integration; at the same time they are gradually integrated into the lexicon. A new word may simply be added to the vocabulary (simple morpheme transfer), especially if it designates a new item or concept. More frequently, however, the lexicon already contains another word with a more or less closely related meaning. It seems that for a while both words may be used side by side until the old word is discarded or the two words become specialized. Old words may, of course, be dropped from the lexicon without language contact—sometimes without any apparent reason, at other times as a result of cultural change (for example, the technical terminology of hand weaving may disappear when the techniques are forgotten). Thus, all Romance languages inherited from Latin the word *bellum* 'war'; French has substituted for it the word *guerre*, which is of Frankish origin. No semantic change seems to be involved, and the original word has simply been discarded.

When the old word continues to exist side by side with the new one, the lexicon is frequently restructured. The meaning of the old word may become specialized. The Estonian word *pii* 'tooth' belongs

to the inherited Finno-Ugric layer of the lexicon; *hammas* 'tooth' is a Baltic loanword. As a result of the introduction of *hammas*, *pii* now refers only to the teeth of a comb or the teeth of a rake; the use of *hammas* in these contexts would be impossible. Or the two words may acquire stylistic differences. Thus, many Norman French loanwords in English carry a bookish or "high style" connotation, whereas corresponding Anglo-Saxon stems are either neutral or "low style." Compare the shades of meaning associated with word pairs like *read-peruse*, *buy-purchase*, and *sweat-perspiration*.

Borrowed words are most frequently nouns, verbs, or adjectives. Bound morphemes, such as derivative suffixes, are borrowed only rarely, since bound morphemes usually indicate grammatical categories, and interference hardly ever results in the addition of new categories to a language. New phonemes are hardly ever borrowed either, but an allophone may become a phoneme as a result of the influx of loanwords. Integration of loanwords into the lexicon usually just adds new members to old categories. In the rare cases in which bound morphemes are borrowed, we are dealing with instances of intimate contact between two languages that must have lasted for a considerable time. The contact between Anglo-Saxon and Norman French appears to have been of that type, and English has acquired some productive derivative suffixes. As long as the suffix *-able*, *-ible* appears only with Romance stems, we cannot confidently claim that it is the suffix that has been borrowed; but the lexicon now contains such pairs as *legible-readable*, *edible-eatable*, and new creations like *get-at-able*—ample evidence that the borrowed suffix has become productive.

Lexical interference can be studied systematically in various ways. Investigation of *code switching* can provide some interesting information concerning the ways in which a bilingual handles the vocabularies of his two languages.

We have defined code switching as the alternate use of two languages by the same speaker during the same speech event. According to Weinreich (1953), the ideal bilingual controls his choice of lan-

guage rigidly, switching according to interlocutor and topic but “certainly not within a single sentence” (p. 73). Haugen (1956) postulated three stages of linguistic diffusion: switching, interference, and integration. The question is now whether the first stage, switching, occurs at random or follows some identifiable pattern, and whether it is possible to pinpoint some factors that may cause the bilingual to perform the switch. Up to now we have concentrated on what happens to the language in a contact situation; when we start looking for reasons for code switching, we shift our primary attention to the bilingual individual.

The speech of Spanish-English bilinguals in the American Southwest has been studied extensively over a period of time (Hernandez-Chavez, Cohen, and Beltramo 1975): Different opinions have been expressed regarding the switching that occurs in their speech. For example, Espinosa (1957) described switching as random intermingling of Spanish and English words. Gumperz and Hernandez (1971) saw a direct functional similarity between code switching on the one hand and style switching within a single language on the other. Very subtle social and psychological factors operate in code switching where the interlocutor and situation are held constant.

Lance (1969) demonstrated that code switching between English and Spanish is not entirely random, but that certain kinds of lexical items are more susceptible to switching than others. He claimed that language switching does not occur simply because the speaker does not know a particular word in one language or the other; rather, the word or phrase that is most readily available at the moment for some reason is the one that comes out. The task of the investigator is to determine the reasons why a particular word or phrase is more readily available.

Lance's research team interviewed three generations of a bilingual family in Bryan, Texas, in order to study their usage of English and Spanish. The abundant material collected and analyzed by the team provides illustrations for many kinds of switching between the two languages, for example, insertion of single words or terms into a sen-

tence, insertion of longer phrases or clauses, and quotations involving Spanish introductions to English quotations with switching within them. Introduction of English words into otherwise Spanish sentences appeared to be triggered by quasi-technical terminology—words that have specialized uses in American culture or technology. Many words were adapted morphologically, but others were simply transferred, such as *troca*–‘truck’, *diche*–‘ditch’, *pompa*–‘pump’, *paipa*–‘pipe’, *queque*–‘cake’. Some of the words were phonologically adapted, some were not. Spanish words used in English sentences were limited largely to such terms as *tortilla*, *enchilada*, and *taco*, for which there are no equivalent English terms. The speakers occasionally pronounced these words with some English phonology (for instance, with a retroflex *r* and a final schwa in *tortilla* and with a slightly aspirated *t* in *taco*).

Many of the switches into English in the midst of otherwise Spanish sentences seemed to be related to the fact that certain terms are used most often in situations that call for English. Numbers were given in English when naming street addresses and prices but in Spanish when referring to the number of children in a family. Thus, sentences like the following might be produced (Lance 1975:139): *Vivo 'horita en siete . . . seven hundred por la Lucky Street* ‘I am living now at 700 Lucky Street’. In a number of instances the use of one or the other language seemed to reflect the speaker’s (possibly subconscious) assessment of the range of his auditors’ lexicons.

Lance found examples of switching in so many grammatical environments that he concluded that there are no syntactic restrictions on where the switching can occur. Gumperz and Hernandez (1971), on the other hand, did find some restrictions, though they admit that the extent of these restrictions is not known.

In his study of Australian German, Clyne (1972) identified several kinds of trigger words (words that apparently facilitate switching between the two languages). Especially common was switching connected with homophonous diamorphs such as the preposition *in*, which has the same form and meaning in both languages. Examples



given by Clyne include *Bäume am Hang mit Häuser in between* 'Trees on the hillside with houses in between' and *Das ist das Cafe near dem Oriental Restaurant* 'That is the cafe near the Oriental Restaurant'. Proper names and loanwords also triggered switching. Anticipational switching occurred frequently at the beginning of a prepositional phrase, a noun phrase, and a clause.

What does the extensive switching in the speech of bilinguals say about their linguistic competence? Are they aware of the switching, and are they aware of different degrees and kinds of "foreign" elements in one of their languages?

These questions were addressed by Beltramo and de Porcel (1975) in a study involving Spanish-English bilinguals. In this study 50 bilinguals were asked to classify loanwords in 60 Spanish sentences. Of these sentences, 40 contained loanwords, one per sentence; 20 were without English loanwords; and 10 contained words having cognates in English with a different meaning (the assumption being that these might be felt to be "less Spanish" than words that had no cognates). The subjects' task was to identify the words on a scale involving five steps: Pure Spanish, Almost Spanish, Half and Half, Almost English, and Definitely English. Pure Spanish included two subcategories: "A cognate, but used correctly in Spanish" and "Acceptable Spanish." "Almost Spanish" included loan translations and loanshift extensions: familiar Spanish words in new environments. "Half and Half" designated morphologically adapted words with English stems; it was assumed that such words should be felt as closer to English than to Spanish. When both morphological and phonological adaptation was present, the word was classified as "Almost English"; when the only adaptation was phonological, the word was classified as "Definitely English." Ten points was the possible score in each category. Examples of the different types of test sentences containing loanwords are given below.

*Este highway es muy peligroso* 'This highway is very dangerous'  
(English word)

*Dicen que Jose va a cuitear su trabajo* ‘They say that Jose is going to quit his job’ (Part English, part Spanish)

*Su hijo va a la escuela alta* ‘His son goes to high school’ (Loan translation)

*¿Tienen Ustedes unas cuestiones?* ‘Do you have any questions?’ (Loanshift)

*Elena es muy sensible a los cambios de clima* ‘Helen is very sensitive to changes of climate’ (Cognate, but used correctly in Spanish).

Beltramo and de Porcel were concerned with both sociological variables (such as degree of acculturation) and linguistic variables. It turned out that higher acculturation was associated with higher scores on the loanword test only in a single category: phonological adaptation. The subject group as a whole revealed a striking consistency in the relative sensitivity to English in each of the loan types. Mean scores for the six types were as follows (that is, average number of correct responses out of a possible score of ten):

Phonological adaptation (Definitely English)	6.58
Morphological adaptation (Almost English)	4.28
Loan translation	3.54
Loanshift	2.96
Spanish with cognates	7.60
Spanish without cognates	8.86

A statistical analysis of the results makes it possible to draw the following conclusions. Native words, and English words transferred to Spanish by mere phonological adaptation, were indeed more easily recognized with respect to English influence than the more “mixed” types. Pure native words (with and without English cognates) were significantly more easily recognized as Spanish than phonologically adapted borrowings were recognized as English. The existence of cognates in English interfered significantly with the recognition of native words as “Pure Spanish.” Within “mixed” types an English influence involving form and meaning was more easily recognized as

English than an influence affecting meaning only. There was no significant difference between loanshifts and loan translations.

The study revealed clearly that bilinguals are aware of the interference (English influence in this case) and that the degrees of interference depended on linguistic factors rather than social ones: regardless of how much the bilinguals differed in their use of Spanish, or in age, education, or other social variables that may reflect acculturation to the larger society, their bilingual competence was about the same as far as their awareness of English influence in the lexicon was concerned.

One result is particularly significant: the finding that knowledge of English (awareness of the existence of English cognates) interfered with the recognition of a purely Spanish word as being purely Spanish. This has implications for the question whether a bilingual has two separate linguistic systems or some combination of the two, a question we will consider at greater length in the next chapter.

### Recommended Reading

Haugen, E. (1969). *The Norwegian Language in America: A Study in Bilingual Behavior*. Bloomington, Ind.: Indiana University Press.

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