DIFFERENT TYPOLOGIES OF BILINGUALISM
Implications for Simultaneous Interpretation

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In most people the cortical language zones include portions of the left hemisphere surrounding the Sylvian fissure, particularly the posterior inferior frontal lobe and posterior temporal lobe. The evidence for the involvement of these areas of the brain in language comes from the localization of lesions associated with aphasia and from the mapping of sites where microstimulation of the cortex alters naming in one or more languages.

Figure 1 shows the cerebral organization of the dominant (left) hemisphere for L1 and L2 in two cases of late bilinguals (Ojemann & Whitaker, 1978) as mapped after electrical stimulation.

The central circular zone is the final motor area for the production of both languages. During the experiment the subjects were shown slides with achromatic line drawings of 45 different objects (a bell, a car, a hand, etc.) and were asked to name them in two languages. If the central area was stimulated the subjects were unable to name the objects in either language.

According to this study, the neural organization for L1 is located in the cerebral zone surrounding the central motor area, while representation for L2 is located in a more external cerebral zone. In fact, if the area marked as L1 was stimulated, the subject's ability to name objects in L1 was impaired, whereas if the more distant area marked as L2 was stimulated, naming in L2 was disturbed.
It is interesting to note that, in late bilinguals, the second language seems to be represented in a wider area of the cortex than the primary language. These areas of different localization provide an anatomical basis for the psycholinguistically described abilities to segregate different languages and switch between them.

The area for L1 being nearer to the production area may explain why bilinguals take longer in naming objects in L2 rather than in L1 (Mägiste, 1978). It should also be noted that monolinguals are usually faster in naming objects because bilinguals have to select words between two languages. Thus, as regards speed in naming objects, the following scores are obtained: a) monolinguals, b) bilinguals in L1, and c) bilinguals in L2.

It is thought that in early, compound bilinguals the area for L2 production is closer to or even coincides with the L1 area, as the two languages are acquired at the same time and are imprinted in the brain as one single code. In fact, early bilingual children do not realize they are speaking two different languages before reaching 3-5 years of age. Figure 2 is a representation of speech production and comprehension areas in early, compound bilinguals.

If language representation is considered in both cerebral hemispheres, left-hemisphere dominance in right-handed monolinguals is well documented (Wada & Rasmussen, 1960; Kimura, 1961; Kinsbourne & Hiscock, 1987). Hemispheric language representation in bilinguals, however, is less lateralized (Albert & Obler, 1978). Moreover, early bilinguals show a different lateralization pattern for language if compared to late bilinguals. Sussman et al. (1982) conducted an experimental study based on a manual-verbal interference
paradigm with the tapping technique. The finger-tapping rate during speech output tasks was computed, bearing in mind that right-hand disruption indicates greater left-hemisphere involvement in the verbal task and vice versa.

Figure 3 shows the findings of this study in adult male monolinguals, early male bilinguals (acquisition of L2 before age 6) and late bilinguals (L2 learned after age 6). While monolinguals revealed the expected left-hemisphere dominance for language, bilinguals showed less lateralized language representation. Whereas early bilinguals, however, showed no statistically significant differences between L1 and L2 in either hemisphere, late bilinguals revealed left-hemisphere dominance only for L1 and greater right-hemisphere involvement for L2. Cerebral language representation, therefore, differs between early and late bilinguals (Sussman et al., 1982).

![Fig. 3. Manual-verbal interference for L2 and L2 in male monolinguals and bilinguals (Sussman et al., 1982). Right hand --> Left hemisphere; Left hand --> Right hemisphere.](image)
A more recent study conducted at our Faculty in Trieste (Gran & Fabbro, 1987), using the same manual-verbal interference paradigm (Kinsbourne & Cook, 1971) on a sample of 14 female right-handed students of interpretation, who had acquired L2 and L3 after the age of 12, showed less lateralization for L1 if compared to the male subjects analysed by Sussman (1982). In addition, lateralization patterns for L2 and L3 were more similar to the results obtained by Sussman with early male bilinguals, in that language representation for L2 and L3 showed a similar degree of left-hemisphere dominance and right-hemisphere representation (Fig. 4).

Fig. 4. Manual-verbal interference for L2 and L3 in late female polyglots (Gran & Fabbro, 1987). Right hand --> Left hemisphere; Left hand --> Right hemisphere.
The organization of one or more languages in the brain underlies the definition of compound and coordinate bilinguals. The original notion - that of a single language system comprising both languages in the compound bilingual versus dual noninterfering language systems in the coordinate bilingual - has been modified following experimental studies (Kolers, 1968; Diller, 1974), which showed that age of acquisition, manner of acquisition and manner of practice affect the way languages are represented neurologically. It is therefore suggested that individuals lie along a continuum between the two poles - the compound and the coordinate.

Lambert et al. (1969) illustrated their understanding of the compound-coordinate dichotomy. The problems of acquisitional context, acquisitional manner and usage were all considered. The acquisitional context was thought to induce a different state depending on whether the two languages were learned in the same or different cultures. As regards manner of acquisition a translation method could facilitate having each word or idiom filed near its translation equivalent in the other language. A language acquired, even if in school, by an audiovisual method of direct learning (in which words were defined only by showing objects or by using circumlocutions in the second language) would result in separated systems. The usage parameter suggested that rigid separation of usage environments (by culture or experience) should result in more separate systems whereas daily mixing of the two languages (e.g. in a bilingual community or as a professional translator) would result in a more compounded system.

Lastly, let us consider two hypothetical cases of early compound and coordinate bilinguals (Fearey, 1977). The compound bilingual would be a child whose parents are of different mother tongue, have the same educational level, are both bilinguals and switch between the two languages. Moreover, the compound bilingual would live in a bilingual society. Such a child would be equally fluent in both languages at all stages of his/her development and would lateralize both languages in the same way. A hypothetical early coordinate bilingual would be an orphan who must start a new life with distant relatives in an alien country. In this case lateralization would occur at different stages of cognitive maturation for each language. Consequently there would never be the same degree of compounding as in the earlier case mentioned. Persons who acquire their second language after 6 years of age are obviously coordinate bilinguals.
The following classification of language organization is suggested for the above-mentioned types of bilinguals:

**COMPOUND EARLY BILINGUALS** (balanced language acquisition during childhood)

**COORDINATE EARLY BILINGUALS** (differentiated language acquisition during childhood)

**LATE BILINGUALS** (second language acquisition after age 12):  
   a) **FEMALES** (language representation similar to early bilinguals)
   b) **MALES**

On the basis of cerebral language representation in the above-mentioned groups of bilinguals, some considerations can be made as regards:

1) strategies used in simultaneous interpretation and teaching implications;
2) selection of interpreters for "relay" interpreting into L1 and into L2.

1. Strategies in simultaneous interpreting and teaching implications

In the student population at the Scuola Superiore di Lingue Moderne per Interpreti e Traduttori (SSLM) of the University of Trieste there are subjects falling under each of the afore-mentioned groups of bilinguals and polyglots. Taking into consideration early bilinguals, a distinction should be made between compound and coordinate subjects. This information emerges from the linguistic history of each student.

The compound subjects are likely to be more fluent bilingual speakers and usually have no accent in either language, but, because of their mixed linguistic education and of their family history, they sometimes do not really master either of the two languages at a deeper cultural level. In other words, they do not have a real mother tongue in which their cognitive acquisitions have developed. In addition, they show a greater degree of interference between the two languages when interpreting. In these cases it is necessary to help them improve their knowledge of each language through individually-tailored study programmes aimed at filling their cultural gaps. In practising simultaneous interpreting it is felt that these students should not receive detailed instructions on syntactical equivalences and differences between the two languages, as the superficial microstructure of their output is usually fluent and correct, while they tend to make lexical errors. Indeed this group of students should be encouraged to express themselves freely and activate their natural, usually effective elocution in the target language. The less they are conscious of syntactic equivalence problems and the more spontaneously they speak, the better the results. In conclusion, since their two compound languages are so closely connected in the
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brain, their major effort should be to separate the two language codes so as to avoid interference between input and output. When interpreting they should adopt a meaning-based or naturalistic approach. At the same time their study programme should be directed to enrich their knowledge of the lexical and cognitive aspects of each language.

Among professional interpreters there are well-known cases of presumably compound bilinguals whose output sounds effortless and spontaneous but shows a lack of deeply built-in culture-bound linguistic abilities.

Let us now consider the second group of early bilinguals who tend to be more coordinate. This is also a category of students and interpreters who, provided language proficiency is of the required level, are well-suited to switch between languages. Learning both languages during childhood or before adolescence has a beneficial influence on pronunciation and intonation. Moreover, the two language codes having been acquired separately, there is less interference and less hesitation in switching from L1 to L2 and vice versa. It is the author's personal opinion that in this case too the knowledge of the two languages should be improved in a parallel fashion because natural fluency should not be hampered or conditioned by structural patterns superimposed on a spontaneous tendency to "explain" - at times in a completely different form - the incoming discourse in the source language (SL) to the audience receiving the message in the target language (TL). Here again cases could be mentioned of professional interpreters who, on the basis of their personal history, could be classified as belonging to this type of bilinguals. Since language acquisition in this group is differentiated (e.g. one language spoken in the family and the other at school), there will be cognitive areas where one language is better developed than the other. As the two linguistic codes, however, are likely to have been differentiated from the beginning and as the knowledge of at least one language is linked to the entire educational process, deficiencies in any particular subject can be overcome more easily than in the case of incomplete development in both languages.

There are a certain number of students coming from the Italian region of Alto Adige who are early bilinguals, either compound or coordinate in tendency. In these cases some sociolinguistic aspects require careful analysis.

a) the fact of belonging to an Italian-speaking or German-speaking family affects fluency in one or the other language;

b) the somewhat conflictual situation of the two local communities (Italian-speaking and German-speaking) probably prevents a harmonious development of bilingualism because of conscious or unconscious emotional involvement;

c) both Italian and German are spoken in that region with local variations in pronunciation and lexicon with serious consequences on linguistic proficiency in most cases.
An interesting case of early bilingualism is that of a student at the Interpreters' School in Trieste who was born of an Italian family and educated first in English schools and later in Italian schools. Though very fluent both in English and Italian and with no accent in either language, she did have problems when working on speeches and texts of some linguistic complexity in either language because she lacked some of the background knowledge that any British or Italian student would possess as part of their respective cultural background. She worked hard on both languages, obtained a degree in interpretation and has probably become a reasonable pivot between English and Italian, though she will never perform as a native speaker in either language. Another student with a similar background is now attending the Interpreters' School in Trieste and, although she has a very good knowledge of written and spoken English and Italian, she has considerable problems in simultaneous interpreting, probably because of a high degree of interference between the two languages.

Generally speaking, late bilinguals perform much better when interpreting simultaneously into L1. In some cases, however, e.g. after living abroad for many years, they may lose some of their original fluency and accuracy. As a rule, when working into their mother tongue, late bilinguals tend to concentrate on the meaning of the source speech and transfer it into L1 in the most efficient and effective way by resorting to the best of their ability in using and manipulating their native language. In this direction (L2 into L1) there is not much need to activate previously elaborated patterns in order to transfer syntactical structures from one language to the other. It is comparatively easy to exert control on the grammatical and syntactical correctness of the output in L1, to modify the final part of a sentence in order to match an unexpected change in the incoming message, etc. If you have a solid knowledge of your mother tongue you will be able to face unforeseen semantic or syntactical problems and "fall on your feet", while continuing to sound correct and reliable to your audience.

The same cannot be said about a foreign language acquired in adulthood. When interpreting simultaneously into a B language, it is a wise strategy to build up a system of ready-made syntactical patterns correlated between L1 and L2. This is the type of language training that late bilinguals should get when interpreting into L2. In fact, if the incoming message is "spontaneously" transferred into L2, syntactical errors and awkward linguistic solutions will inevitably occur (Snelling, 1989). At the SSLM in Trieste a thorough comparative analysis is made of the syntactic structures of the languages involved in "active" interpretation and students gradually acquire the ability to use L2 in a manner which is correct and perfectly acceptable to native speakers.
2. Selection of "relay" interpreters

The following observations are made in relation to the lively debate that took place at the Symposium on the Theoretical and Practical Aspects of Teaching Interpretation (Gran & Dodds, 1989) on relay interpreting. The Director of the Interpreting Department of the E.C. Commission and some teachers were of the opinion that an interpreter working from L1 into L2 is preferable as a "pivot" because he/she is bound to understand his/her mother tongue in all its shades and subtleties and will therefore provide a more accurate and reliable version in L2, even though the style and register of the output may not be as pleasant and sophisticated as that produced by a native speaker. The policy adopted by the European Parliament as regards "pivots" and the opinions voiced by other participants in the Symposium indicated a somewhat different approach, namely that interpreters should work exclusively into their mother tongue, possibly from a considerable number of other languages, because their output is much more acceptable to native listeners. Besides, such requirements may vary according to the audience involved: technical experts will bear with a slightly foreign accent if they realize that the original message is being faithfully conveyed, while politicians, as a rule, will complain about an interpreter whose pronunciation or elocution reveals that she/he is not a native speaker.

Whatever approach is adopted vis-à-vis this problem, however, it is suggested that in selecting relay interpreters, linguistic proficiency being equal, the following order could be borne in mind in assessing fluency and promptness in switching between languages.

1) Compound bilinguals (if problems of linguistic-cognitive matching are solved)
2) Early coordinate bilinguals
3) Late female bilinguals (coordinate)
4) Late male bilinguals (coordinate)

Bearing in mind the cerebral representation for language illustrated earlier on, it appears that groups 1 and 2 are better suited for language switching, where production in L2 is also required. Groups 3 and 4 are likely to perform better into L1 from other languages.

This is an area where experimental studies have not yet been systematically carried out to inquire into many aspects of bilingualism and polyglossia, particularly with regard to simultaneous interpreting. It is hoped that experimental studies under way at the Scuola Superiore di Lingue Moderne and joint research projects being carried out in collaboration with the University of Ottawa will produce greater insight into the mental processes involved in the
active use of languages and will suggest new ways to improve teaching methods.

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