LANGUAGE MEDIATORS AS PROFESSIONAL BILINGUALS

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A nyelvi közvetítő mint hivatásos kétnyelvű személy. A fordítást és tolmácsolást gyakran a nyelvi készségekkel azonosítjuk, és azt feltételezzük, hogy önmagában a nyelvi kompetencia jó minőségű professzionális nyelvi közvetítést is eredményez. A hivatásos fordításhoz és tolmácsoláshoz azonban speciális kétnyelvű (többnyelvű) nyelvi kompetenciára van szükség, hiszen a magas szintű nyelvtudás a fordítás és tolmácsolás készségének csupán egyik előfeltétele. A hivatásos kétnyelvű kompetenciát fel kell építeni, fejleszteni és fenntartani szükséges. A hivatásos kétnyelvűek a munkanyelveiket tudatosan használják, és speciális interlingvális kommunikációs, pszicholingvisztikai, valamint neurolingvisztikai jellemzőkkel rendelkeznek, mégpedig azért, mert nem saját, hanem mások kommunikációs szükségleteit elégítik ki. A jelen tanulmány célja, hogy áttekintést nyújtson ezekről, és ezáltal új keretet hozzon létre a nyelvi közvetítők nyelvi készségei és erőfeszítései tanulmányozásához.

Kulcsszavak: kétnyelvűség, fordítás, tolmácsolás, mentális lexikon, egyéni és közösségi lexikonok

1. Introduction

Language mediation is language use in real time; translators and interpreters use several languages as part of their job. This is the most visible facet of their professional activity. So much so that 'outsiders' to the profession often associate language mediation with the knowledge of two or more languages.

There seems to be a consensus among translation scholars that high level language proficiency is a prerequisite but not a sufficient requirement of the ability to translate or interpret (Birjani–Farahzad 1997; Kussmaul 1995; Presas 2000; Toury 1995). Not only is it insufficient to guarantee translation competence but also it seems that translating and interpreting require a specific kind of bilingual (or multilingual) competence. Language mediators can be considered professional bilinguals since their bilingual competence serves their clients' communication needs.

Several authors have attempted to capture this specificity by comparing natural bilinguals to language mediators. For this purpose they use terms such as 'regular bilinguals' and 'interpreter bilinguals' (Grosjean 1997) or 'interpreters' and 'non-interpreting bilinguals' (Chmiel 2010). The term **professional bilinguals** seems to be more suitable for discussion of language mediators' linguistic competence since it conveys better the underlying idea that it is indeed a **special kind of bilingualism** that

needs to be distinguished from other forms. Furthermore, it also expresses the fact that professionals of both written and spoken language mediation belong to this category of bilinguals. Finally, it provides a new framework for the investigation of language mediators' linguistic skills.

Angelelli (2010, 2011) distinguishes between circumstantial and elective bilinguals. While the former become bilinguals because of their life circumstances, the latter choose to learn a language and do it in formal settings. However, professional bilingual competence needs to be built up regardless of the way a person becomes bilingual. It is considered to be a special case of bilingualism. Professional bilingualism has several implications from the point of view of sociolinguistics, psycholinguistics and neuropsychology. In what follows, I will examine the issues of bilingualism, the mental lexicon, and language and the brain relevant to the study of language mediation.

2. Bilinguals

Bilingualism at first sight seems to be a straightforward notion. Bloomfield defines bilingualism as the native-like control of two languages (Bloomfield 1933). This implies a perfect symmetrical bilingualism. Other authors think that this is unrealistic and define bilingualism as the use of two (or more) languages (or dialects) in everyday life (Grosjean 1982; Weinreich 1953). Grosjean further notes that bilingualism is characterised by the complementary principle, which means that bilinguals "usually acquire and use their languages for different purposes, in different domains of life, with different people" (Grosjean 1997: 165). This view emphasises the **fluid nature of bilingualism** and the fact that it might vary across the bilingual individual's lifetime (Grosjean 1997; Presas 2000). According to this holistic view, bilinguals are considered to be "not so much as the sum of two (or more) complete (or incomplete) monolinguals but rather as specific and fully competent speakers-hearers who have developed communicative competence that is equal, but different in nature, to that of monolinguals" (Grosjean 1997: 167).

Furthermore, bilingualism has several dimensions: linguistic, sociological, psychological and biological, just to name a few. Hamers and Blanc distinguish between bilinguality and bilingualism. They define **bilinguality** as the psychological state of an individual who has access to more than one linguistic code as a means of social communication; the degree of access will vary along a number of dimensions which are psychological, cognitive, psycholinguistic, social psychological, social, sociolinguistic, sociocultural and linguistic (Hamers – Blanc 1989).

Bilingualism, on the other hand, is a concept that includes bilinguality (or individual bilingualism) but refers equally to the state of a linguistic community in which two languages are in contact, with the result that two codes can be used in the same interaction and that a number of individuals are bilinguals (societal bilingualism)

(Hamers – Blanc 1989). Although translation in officially multilingual countries is an interesting research path (Lane-Mercier et al. 2014), in what follows we will be concerned with bilinguality, i.e. individual bilingualism. Hamers and Blanc summarise the different dimensions of bilinguality as follows: relative competence, cognitive organisation, age of acquisition, exogeneity, social cultural status and cultural identity.

Of these dimensions the first three are of special relevance to our topic. The dimension of **relative competence** takes into account "the relative nature of bilinguality, since it focuses on the relationship between two linguistic competences, one in each language". Accordingly, "a distinction has been made between the *balanced* bilingual who has equivalent competence in both languages and the **dominant** bilingual for whom competence in one of the languages, more often the mother tongue, is superior to his competence in the other" (Hamers – Blanc 1989: 6). Others like Laks (2003) are also of the opinion that completely balanced bilinguals are few and far between.

As for **cognitive organisation** and bilinguality, we can distinguish between **compound** and **coordinate** language systems. Compound systems are characterised by the fact that "two sets of linguistic signs come to be associated with the same set of meaning". In coordinate systems "translation equivalents in the two languages correspond to two different sets of representations". It needs to be underlined here that "although there is a high correlation between the type of cognitive organisation, age and context of acquisition, there is no one-to-one correspondence between the form of cognitive representation and the age of acquisition". It emerges that

> *an individual who learned both languages as a child in the same context is more likely to have a single cognitive representation for two translation equivalents, whereas one who learned an L2 in a different context from that of his mother tongue will probably have a coordinate organisation* (Hamers–Blanc 1986: 27).

Moreover, the distinction between compound and coordinate bilinguals is not absolute, which implies that "different forms of bilinguality are distributed along a continuum from a compound to a coordinate pole". This means that "a bilingual person can at the same time be more compound for certain concepts and more coordinate for others" (Hamers – Blanc 1989: 9–10).

Regarding the **age of acquisition**, we can distinguish three types of bilinguality: **childhood**, **adolescent** and **adult** bilinguality. In the case of childhood bilinguality, "bilingual experience takes place at the same time as the general development of the child". Simultaneous early (or infant) bilinguality means that "the child develops two mother tongues from the onset of language". Consecutive childhood bilinguality occurs when the child "acquires a second language early in childhood but after the basic linguistic acquisition of his mother tongue has been achieved" (Hamers – Blanc 1989: 28).

2.1. Translators and Interpreters as Bilinguals / Multilinguals

Language mediators are bilingual or multilingual persons since they have linguistic competence in several languages: their work consists of comprehending, decoding and encoding languages. Therefore, it can be assumed that they are highly proficient in more than one language. In general, a translator or an interpreter has one or two active languages, and they might have several passive ones.

An active language is a language into which one works, whereas a passive language can be very broadly defined as a language which a translator or an interpreter understands but into which they do not work since their production in these languages is not up to the standard which is required for professional translation/interpretation. A high level of bilinguality, and by extension multilinguality, is considered to be a **prerequisite for language mediation**. However, as Hamers and Blanc note, "no conclusions can yet be drawn concerning the fact that one type of bilingual might be more suitable to perform these tasks". There are arguments according to which "a coordinate bilingual would make a better interpreter [or translator] than a compound one, on the grounds that a coordinate bilingual possesses two cognitive units, one for each translation equivalent". This argument is flawed since "if the compound bilingual possesses only one cognitive unit corresponding to two translation equivalents, he can still be aware of the degree of overlap between the two translation equivalents". One might also think that, as a rule, early or infant bilinguals make good interpreters since "infant bilinguals develop very early the capacity to translate from one language into the other while retaining the meaning of the message" (Hamers – Blanc 1989: 253). However, there is no substantial empirical evidence supporting these two points, so for the time being they remain speculations.

The starting point for a further study of this issue might be the fact that although language mediators have a high level of bilinguality and bilingual competence, this is only a prerequisite for professional translation/interpreting. The main difference between other bilinguals – either infant or adult – and interpreters, is that while the former use several languages for their own communication purposes in their private or professional life, translators and interpreters use their bilingual competence to serve others' communicational needs.

This means that they are **professional bilinguals**, which has several implications for their mental lexicon, linguistic skills, language use and behaviour. Experience in translator and interpreter training shows that from the point of view of language mediation, natural, infant bilinguals do not necessarily have a marked advantage over late bilinguals. One of the reasons for this is that, more often than not, they are not fully aware of their languages since they usually acquired them in a non formal way and did not learn them within the framework of formal language education. In fact, translators and interpreters need to be aware of all of their working languages, even their first languages, which they are required by their profession to use in a **conscious** way.

Another important point to make here is that a translator's or an interpreter's **professional linguistic competence needs to be cultivated and strengthened**, even when it comes to their first language, for the same reason, namely because a language mediator generally uses their first language for their own communication purposes. We very rarely speak about topics such as innovation transfer, sports angling, the macroeconomics of a given country or laminated beam technology in our private lives to the extent to which we need to use the related terminology of these (and a lot of other) subjects when we work.

This is also true of linguistic **registers**: we are required to be aware of and use registers in our professional lives that we would not otherwise use in our everyday activities. Although translators and interpreters can be considered bilinguals, it is very rare that their bilinguality is perfectly balanced. First of all, their linguistic skills in their different working languages vary as far as production is concerned, based on whether it is an active or passive language. Second, depending on the language of the country or family they live in, they use their languages in their non-professional life to a varying degree. There are translators and interpreters who do not live in the country where their first language is spoken, and for this reason only use it very rarely outside their family and work domains. Very often, they live in the country of their first language where they very rarely use their second language outside their work. This also means that their linguistic competence in their working languages covers different domains. It requires a lot of effort to keep up these languages to the standard of professional language mediation in such circumstances.

Moreover, they may use their second or passive languages for their own conversational purposes so rarely that they express themselves in that given language with more ease when they are working than when they are speaking on their own behalf. This of course does not mean that they lose fluency or the capacity of oral expression altogether. It only means that words come less easily when they need to articulate their own feelings, ideas, opinions or are required to participate in everyday conversation in a colloquial manner.

In the case of interpreting, this is due to the fact that **interpretese** is characterised by a certain number of panels or prefabricated chunks, a certain style, register and non specialised vocabulary that do not always correspond to everyday, colloquial language. It is also true the other way round: just because someone is very fluent and native-like in one language does not necessarily guarantee that this person will be a fluent interpreter without training, since the chances of them losing their fluency when they need to speak for others are very high.

3. The Mental Lexicon

The most salient aims of verbal communication amount to deriving meaning from visual patterns when reading, and sound patterns when speaking or listening. In order to be able to do this, we need to possess stored knowledge in our memory about words presented in the incoming perceptual information. This stored knowledge is the mental lexicon.

According to Garnham, the mental lexicon "specifies how the word is spelled, how it is pronounced, its part of speech and what it means. However, it is convenient to think of the lexicon itself as containing not the meaning of words, but rather *pointers* to those meanings" (Garnham 1985: 43).

One of the characteristics of the mental lexicon is that it is **highly organised** since it needs to contain an enormous number of words. According to estimates the "number of words known by an educated adult […] is unlikely to be less than 50,000 and may be as high as 250,000". This means that "words cannot be heaped up randomly in the mind" and that "the mental lexicon is arranged on a systematic basis" (Aitchison 1987: 6–7).

Another reason for the systematic organisation of words in the mental lexicon is that they **can be retrieved very fast**. As Aitchison notes "[p]sychologists have shown that human memory is both flexible and extendable, provided that the information is structured". Furthermore, [r]andom facts and figures are extremely difficult to remember, but enormous quantities of data can be remembered and utilised, as long as they are well organised" (Aitchison 1987: 5).

The mental lexicon is often likened to book dictionaries (Aitchison 1987; Garnham 1985). However, there is little similarity between the words contained in a dictionary and those in our minds. One of the main differences can be found in the organisation of book dictionaries and the mental lexicon. While the former list words in alphabetical order, "human mental dictionaries cannot be organised solely on the basis of sounds or spelling. Meaning must be taken into consideration as well, since humans fairly often confuse words with similar meanings". This implies that "the organisation of the mental lexicon is likely to be considerably more complex than that of book dictionaries, for whom orderliness is a prime requirement" (Aitchison 1987: 10–11).

Book dictionaries and the mental lexicon differ in terms of **content** as well. Book dictionaries contain a fixed number of words. For this reason, they are "inescapably outdated because language is constantly changing, and vocabulary fastest of all". The contrary is true for the mental lexicon, whose content is constantly changing since people "add new words all the time, as well as altering the pronunciation and meaning of existing ones". Furthermore, people "often create new words and new meanings for words from one moment to another, while speech is in progress" (Aitchison 1987: 11). The mental lexicon is therefore characterised by a much higher degree of **fluidity** and **flexibility** than book dictionaries.

Another difference resides in the fact that the mental lexicon contains far more information about each entry. Furthermore, "in book dictionaries, words are mostly dealt with in isolation". They "tend to give information that is spuriously cut and dried", and they "do not often spare the space to comment on frequency of usage" (Aitchison 1987: 12–13).

3.1. The Structure of the Mental Lexicon

Models representing the mental lexicon can be grouped in two main categories: a) atomic globule theories and b) cobweb theories (Gósy 1999; Aitchison 1987). According to **atomic globule** theories, the mental lexicon is organised in semantic fields of different sizes, and the units making up the semantic fields can belong to more than one semantic field at the same time. Unlike atomic globule theories, **cobweb theories** assert that "words are recognised as related because of the links which speakers have built between them" (Aitchison 1987: 64). This means that any given semantic unit might be linked to several other units.

Of these two types of theories, the cobweb view seems to describe better how words in the human mind are linked together (Gósy 1999; Aitchison 1987). Word association experiments have shown that words in the human mental lexicon seem to be organised in **semantic fields**, and that words from the same semantic field are closely linked. Connections between coordinates and collocational links are thought to be strong.

The mental lexicon is **constantly evolving**. It is characteristic of the individual and is language specific. It is not the vocabulary an individual habitually uses. The mental lexicon is composed of three different parts whose borders are quite fuzzy: the active, the passive and the activated part. The active part of the mental lexicon consists of linguistic elements often used by the speaker. The passive part contains the words and linguistic elements which are rarely used by the speaker. The activated part of the mental lexicon comprises the elements that the speaker is using at a given moment. These can belong either to the active or the passive part (Gósy 1999). When it comes to activating words contained in the mental lexicon, "humans behave like jugglers […] in that they have to deal with semantic, syntactic and phonological information at the same time" (Aitchison 1987: 165). In addition, "they seem to activate many more words than they need as they plan speech, words which occasionally pop into one's utterance inconveniently" (Aitchison 1987: 175).

3.2. Retrieval from the Mental Lexicon

There are several models that try to account for the way items are retrieved from the mental lexicon: the stepping-stone model, the waterfall or cascade model and the **spreading activation** *model*. Out of these three, the last one seems to be the most plausible. It is also known as the interactive activation model (Gósy 1999; Aitchison 1987). It takes into account the fact that various stages of the retrieval process are

interlinked and sometimes occur simultaneously. It also shows that during retrieval, sound and meaning appear to influence each other.

The spreading activation model of word retrieval from the mental lexicon depicts a situation that can be likened to **electric circuitry**. This image expresses well the idea that retrieval occurs in a similar way to electricity, i.e. like a "current flowing to and fro between various points in a complex electric circuit" (Aitchison 1987: 173). This model also accounts for the fact that more frequently used words need less activation, as well as for the fact that slips of the tongue occur because topics (semantic fields) which an individual is concerned with become subconsciously activated, and once a topic is activated then the whole range of sound and meaning words get excited.

In addition, this interactive model reflects what we know about how the human brain functions. In Aitchison's words, this model supports the idea that the links between words are more important than their absolute location, and this also fits in with what we know about the human brain, where it seems to be impossible to locate particular brain areas with as much accuracy as we can a heart or a kidney (Aitchison 1987: 175).

So far we have seen how **lexical access** functions, i.e. words are retrieved from the lexicon on the basis of perceptual and contextual information. At the end of this process, the retrieved word "becomes *candidate* for the identity of the current input" (Garnham 1985: 43). It needs to be noted that this activation is automatic. But this is only one side of the coin. Another procedure to be considered here is word recognition.

3.3. Word Recognition

Word recognition is achieved when there is only one remaining candidate, and the input has been identified. There are a lot of questions still to be answered concerning how word recognition works. There is, however, one well known fact, namely that a lot of it is guesswork, since the physical conditions in which normal speech is perceived are not ideal as it is physically impossible to hear each phoneme because speech is too fast.

Another factor influencing speech perception is the fact that sounds are altered by their neighbours. In addition, sound segments cannot be separated out because each merges into those on either side. Furthermore, we live in a noisy world, and whole chunks of words can become modified.

There are some basic findings that demonstrate the main principle of how this guesswork is carried out in practice. These are: (1) the frequency effect, (2) word/non-word effects, (3) context effects, (4) degradation, or stimulus quality effects, (5) word-superiority effects (Garnham 1985).

There are several types of models that try to account for how word recognition actually works. Garnham (1985) groups these theories into direct access models and search models, Aitchison (1987) into serial models and models of parallel processing. One of the main issues concerning word recognition is whether we sort out one possible candidate after the other, or candidates are considered simultaneously. The latter seems to be more probable, although there are still a lot of uncertainties as to the exact details.

To conclude, the key issue is that words are not stored in the mind in a random way. Storage, on the contrary, is well organised in the mental lexicon, and words seem to have links to one another. These links may be stronger or weaker depending on the semantic field the word belongs to. This way storage seems to assist lexical access, i.e. the way we reach words when they are needed. Word retrieval can also be described as spreading activation, a phenomenon that builds on the associative links between words. This means that when we hear the word 'phone', it triggers a reaction which activates words such as 'cell phone', 'iPad', 'ring', 'answer' and 'dial'. This activation lasts only for a short time before it fades.

3.4. Personal Lexicons and Communal Lexicons

The notions of personal and communal lexicons shed new light on the content and organisation of the human mental lexicon. Clark asserts that we all have our **personal lexicons**, i.e. a stock of words we know and use more or less frequently, and that the personal lexicons of speakers of the same language differ. These differences are not random but systematic. Clark's argument is that "these differences help determine what we mean and what we take others to mean. They play an integral role in the formulation and interpretation of utterances. They bear directly on how language is structured and used" (Clark 1998: 63).

At the heart of this argument lies what Clark calls **communal lexicons**, i.e. "the vocabulary associated with a community of people – for example, physicians, football aficionados, San Franciscans – who are distinguished by their common knowledge of a particular field of expertise – medicine, football, San Francisco". Communal lexicons have four main characteristic features: (1) they are required by the very notion of conventional word meaning, (2) they differ from each other in ways that we keep track of, (3) they are associated with communities of expertise, and (4) they mirror the communities they are associated with (Clark 1998: 63–64).

Traditionally, a lexical entry is thought to be composed of two parts containing information about its form (morpho-phonological) and its meaning (lemma). Clark argues, however, that entries in our personal lexicons "must be indexed by the most inclusive community it is conventional in – by the communal lexicon it belongs to". This means that "instead of [word form, lemma] we must have [community: word form, lemma]". In other words, our personal lexicons are structured by the communal lexicon each entry belongs to. Such lexical entries propose a different view of how we retrieve words from our mental lexicon. According to this view, when we speak to someone we do not select words from our personal lexicon haphazardly. Instead, we choose them after having ascertained which communities we and our interlocutor believe we are members of. We then limit ourselves to the entries indexed for those communities. This implies that "word selection and word interpretation then become social processes. They depend on judgements of shared membership in cultural communities". In addition, "we each create and maintain social profiles of our interlocutors, or we will have problems

communicating. A principle ingredient in these profiles is a representation of the communities we and our interlocutors belong to" (Clark 1998: 72).

While personal and communal lexicons are valuable notions for the study of the human mental lexicons, there are a few limitations that need to be mentioned here. First, this theory only applies to content words, and not to function words. Second, it implies that we are only able to communicate with people whose communal lexicon we are familiar with. If this were the case, a miner would not be able to communicate at all with a footballer. Third, it also suggests that any individual needs to be aware of all the existing communities of expertise. And finally, somehow this theory suggests that we only talk about specialised topics, or topics of expertise. Without denying the fact that communication is a social act, it needs to be highlighted that one of the possible reasons why we communicate with others is because we wish to know them better and thus seek information about the different communities they belong to, their expertise and their specialised vocabulary.

3.5. The Mental Lexicon of Translators and Interpreters

The mental lexicon of language mediators is a bilingual or multilingual one. There seems to be a consensus among translation scholars that there are two **separate mental lexicons** which are closely linked (Gile 2001; Heltai 2010; Szabari 2002). Nevertheless psycholinguistic research seems to indicate that different languages constitute separate subsystems within one storage system (de Groot 2011; Grosjean 1989; Grosjean et al. 2003; Paradis 1980).

Heltai (2010) provides us with a good description of the mental lexicon of translators and interpreters by comparing it to that of natural bilinguals. In the case of natural bilinguals, certain words of the source language belong to the target language's mental lexicon: these are borrowed words that bilinguals have already built into their target language's mental lexicon. The words of the two languages are kept apart by language tags, which means that the lemma of each word contains information about which language it belongs to. Interpreters and translators use language in a conscious way and know exactly to which language each word belongs.

They also know which words used by the bilingual community do not belong to the standard variety of the target language. In other words, they **administer language tags systematically** and differentiate between the words of the source language and the target language in an exact way. Heltai mentions another structural difference between the mental lexicon of bilinguals and interpreters/translators, namely the fact that in the case of the latter direct links are stronger since translational equivalents become increasingly stronger through frequent translation and interpretation. This results in the fact that translators and interpreters form a high number of **constant links**, i.e. word pairs belonging to the source and target language.

As for the activation of interpreters' and translators' mental lexicon, Heltai's analysis can be summarised as follows: interpreters and translators activate only the

target language and make sure that the elements of the source language do not appear in their linguistic output. Regarding word retrieval, if interpreters do not find the target language equivalent, they spend more time looking for it, use a synonym or paraphrase the source language input, whereas natural bilinguals might switch codes.

It is worth mentioning Grosjean's precept, according to which non interpreter bilinguals usually function in either monolingual or bilingual mode (Grosjean 1997). In the bilingual mode 'regular' bilinguals usually interact with each other. 'Interpreter bilinguals', however, operate in a special bilingual mode, where the input and output mechanisms are either active or inactive. Chmiel highlights a special case of interpreting, which is that of 'unidirectional' interpreters working from several 'C' languages into one 'A' language. This is a common modus operandi in the interpretation services of the European Union's institutions. Chmiel describes it as a very special kind of multilingual functioning, where the output mechanisms are activated only in the 'A' language (Chmiel 2010).

Gile developed his lexicon-oriented model of language proficiency of interpreters: the Gravitational Model of linguistic availability describing the relative availability of lexical units and linguistic rules. Gile's model consists of variable and invariable, active and passives parts. The model attempts to capture the dynamic nature of lexical and syntactic availability, i.e. that words belong to the active, passive or activated part of the mental lexicon. Gile's model contains five intuitively derived principles and the theoretical differences between literary translators, technical translators and interpreters are also highlighted (Gile 1995: 216–227).

3.6. Translating and Interpreting into B

A long-debated issue concerning the bilingual linguistic competence of translators and interpreters is the specificities of translating and interpreting into a B language since it is a reality in the translation market, and will continue to be so. As Szabari asserts, interpretation into the B language is definitely in demand in the market, however, its significance is conspicuous primarily in the communication between less widely used languages and major languages on the one hand, and among less widely used languages on the other hand. Securing 'A' language interpreters is often a financial question as in most local markets 'A' language interpreters are few and far between, and the costs of higher fees (in the case of interpreters coming from 'more expensive' countries) very often exceed the financial capabilities of organisers (Szabari 2004: 13).

However, expert opinion has long favoured interpreting into one's first language even though both working into a first language and into a second language have their advantages and disadvantages. This is due to the fact that, as Campbell puts it, these "two activities are in a way mirror images". This means that in translating from a second (B) language, the main difficulty is in comprehending the source text; it is presumably much easier to marshal one's first (A) language resources to come up with a natural looking target text. In translating into a second language, the comprehension of the

source text is the easier aspect; the real difficulty is in producing a target text in a language in which composition does not come naturally (Campbell 1998: 57).

Concerning the directionality of interpreting, there are basically two schools which advocate two opposing convictions: the Paris School and the Russian School. According to the Paris School, only interpreting into one's 'A' language guarantees the high quality required from professional interpreters since natural language production is only possible in this language. The Russian School, however, supports the idea that it is into the 'B' language that interpretation can be done to the highest possible level since comprehension is much better in the A language. According to Szabari, the reason for this divide can be found in factors such as where and how the interpreter mastered the 'B' language. If this was done in his own country within an organised framework as was probably the case in the Soviet Union, listening comprehension was probably more problematic than speaking as he had no opportunity to gain familiarity with the multitude of native speakers. On the other hand, interpreters in Western countries generally mastered their foreign languages while living or studying in the target language country, thus comprehension is not difficult for them even if a speaker has poor articulation or complicated wording (Szabari 2004: 15).

The most important challenge in translating/interpreting into a 'B' language comes from the fact that the translator/interpreter needs to possess a "very special variety of second language proficiency". This means that they "have to work within the limitations of their second language repertoire". A speaker using a foreign language for their own communicational needs "can hide their shortcomings by tailoring the text to suit their abilities" (Campbell 1998: 58), i.e. they can adapt the text to their mastery of the language. Another common strategy among speakers of a foreign language, in the case of uncertainties as to the correctness of what they are about to say, revolves around avoiding mistakes and reformulating their speech according to what they are able to express. When catering for the communicational needs of others, of course, this is not so obvious, and is considerably more difficult to achieve. However, experience shows that it can be learnt, and interpreters can construct their language skills through systematic training in order to possess the adequate linguistic tools for good quality interpretation into a second language (Adams et al. 2002; Donovan 2004). This is also true for the range of vocabulary (Nida 2001).

4. Language and the Human Brain

The brain is relevant to the study of linguistic behaviour since linguistic output is the product of brain functioning. The brain is the organ of the human body which is central to communication, information storage and processing, language perception and production.

4.1. Localisation of Language in the Brain

There have been numerous attempts to localise language in the brain. There are, in fact, two different views regarding the place of language in the brain. Some researchers assert that "language is restricted to a single location or a limited number of locations", which would "support the idea that we possess a language faculty that is independent of other thought processes". Others believe, however, that language "is widely distributed throughout the brain" (Field 2003: 53).

The first attempts to find the place of language in the brain go back to the middle of the 19th century. These attempts are based on evidence from patients who had suffered brain damage which had impacted their speech. The two most salient researchers were a French surgeon, Paul Broca, and a German doctor, Carl Wernicke. Paul Broca presented a paper at the French Anthropological Society at the beginning of the 1860s, in which he described the observations he had made of twenty individuals suffering from severe language impairment. In nineteen out of these twenty cases, "the problems with language appeared to have resulted from brain lesion on the left side of the head, just in front of the ear and slightly below the top of it (technically the lower part of the left frontal lobe)" (Field 2003: 53). This area is known as *Broca's area*, and it seems to support the localisation theory of language to a certain part of the brain. It also suggests that the region responsible for speech production is localised in the left hemisphere.

A few years later, in 1874, Carl Wernicke identified a different area in the brain linked to language deficit. It is called **Wernicke's area**, and is also situated in the left hemisphere in the posterior part of the temporal lobe, behind the left ear. However, this localisation theory has been challenged by more recent techniques of brain imaging used for the study of language and speech localisation in the brain. More recent evidence from brain imaging suggests that language is widely distributed throughout the brain (Field 2003; Tate et al. 2014; Huth et al. 2016).

These findings supporting the fact that language is distributed across the brain can nonetheless be reconciled with Broca's and Wernicke's earlier findings. If we accept that language is not localised in certain areas but rather distributed across the brain, it must rely upon a massive system of nerve connections to transmit and assemble it. It seems likely that the Broca and Wernicke areas represent major junctions for these networks. So what is damaged in an aphasic patient is not a separate 'language store' but the ability to transmit language across vital neural links (Field 2003).

4.2. Lateralisation in the Brain: Left vs. Right Hemisphere

Regarding speech, it is important to note that the nerve connections going from the right ear to the left hemisphere are thicker than those going from the left ear to the right hemisphere. Language and speech processes are coordinated by the left and the right hemispheres, but the exact roles of each hemisphere are much debated even today. Earlier theories asserted that language comprehension resulted from the functioning of

the left hemisphere, while the right hemisphere was responsible for controlling other types of perception such as musical talent (Gósy 1999: 21).

The relationship of the two hemispheres with the rest of the body is a **contralateral relationship**, which means that "the right side of the brain controls movement and sensation on the left side of the body while the left hemisphere is responsible for the right side". Furthermore, "the left hemisphere in most individuals is associated with analytic processing and symbolisation, while the right is associated with perceptual and spatial representation". If we take this reasoning further, it can be suggested that there is "an important role for the left hemisphere in language processing, and, indeed, the effects noted by Broca and Wernicke involved damage to the left side of the brain" (Field 2003: 96).

In light of the above, it can be proposed that language and speech can be localised in the left hemisphere of the brain, but this does not exclude the role or participation of the right hemisphere in speech processes. While it can be asserted that mainly the left hemisphere is responsible for decoding language, speech perception and comprehension, the right hemisphere might take over some of these processes, i.e. language can **relateralise** itself in the case of patients who have suffered brain damage at a very early age. The reason for this "might be that in early life there is a period of flexibility in the brain, with neural connections yet to be fully established and language not yet lateralised". This means that if "the left part of the brain is unavailable due to an accident or surgery, then language might establish itself in the right hemisphere instead" (Field 2003: 97).

According to Lenneberg's theory, if the damage occurred before a certain age in infancy, the patient might fully recover speech. This period is called the **critical period** in first language acquisition, and it is estimated to be around the age of five to seven years (Field 2003; Gósy 1999).

4.3. The Interpreter's Brain

One of the most researched topics in interpreting studies is the neurological and neuropsychological functioning of an interpreter's brain, something which has not been widely researched among translators (García 2015). In the field of interpreting, empirical research mostly conducted during the 1990s had the objective to find out whether an interpreter's brain and the thinking processes involved differ substantially from that of 'ordinary' people. We should bear in mind that not only do interpreters perform complex mental activities, but they are, at the same time, bilinguals or polyglots. The most recurrent research topics in this field are cerebral hemispheric dominance for language, earedness, the difference between shadowing and interpretation in terms of lateralisation and the cerebral organisation of attention. This research concerns simultaneous interpretation.

4.4. Hemispheric Dominance for Language in Interpreters

Kurz investigated cerebral processes during simultaneous interpreting using EEG mapping methods to obtain EEG probability maps, i.e. "schematic brain maps which reflect the degree of probability for the coupling/decoupling of different cerebral regions during specific mental/cognitive operations" (Kurz 1992: 201–202). The main findings regarding hemispheric involvement during simultaneous interpreting include the following aspects: 1) Both hemispheres are involved in SI – most of all the temporal regions (left more than right). 2) There are EEG differences between SI into L1 (native language) and L2 (foreign language). 3) In right-handed female individuals the right hemisphere seems to be more important for L2 than L1 (Kurz 1992: 206).

Regarding hemispheric specialisation, Fabbro and Gran note that the results of their experiment conducted with the participation of 14 right handed female student interpreters in the fourth year at the School for Translators and Interpreters of the University of Trieste "did not reveal any significant difference between hands, thus suggesting that probably simultaneous interpretation requires the involvement of both cerebral hemispheres" (Fabbro – Gran 1994: 305).

Another interesting factor has been observed by Darò regarding suprasegmental features of language during interpreted speech. The fact that interpreters possess a rapid articulation ability since they normally speak very fast when they are working, "most probably leads to a major involvement of the cerebral structures which control verbal expression, and in particular, to a greater participation of the right hemisphere in the control of speech production". Darò also takes into account in her discussion the cerebral lateralisation for speech of the human brain, and notes that the right hemisphere is generally known for controlling the suprasegmental features of language, therefore a higher speaking speed, occurring during simultaneous interpretation, could be partly responsible for difficulties in controlling, say, intonation, prosody, pronunciation, etc., because of a sort of interference with or overcharge of the right hemisphere. In fact the first evident symptoms of time stress in inexperienced or student interpreters are uncontrolled prosody and pronunciation, wrong intonation coupled with an extremely loud voice (Darò 1994: 267). Hamers et al. research findings confirmed the decreased lateralisation in interpreters (Hamers et al. 2002).

Corina and Vaid studied language lateralisation in bimodal bilinguals, i.e. hearing bilinguals who are fluent in American Sign Language and English, and they concluded that there is "a left hemisphere contribution to the mediation of sign language in hearing ASL-English bilinguals" and suggest that "language lateralisation may arise from inherent characteristics of human languages, regardless of the modality in which that language is expressed" (Corina and Vaid 1994: 246).

The latest neuroscientific research path involves investigating *brain plasticity* in interpreters. The University of Geneva's research team used functional magnetic resonance imaging (fMRI) to investigate the neural basis of language control in multilingual subjects and found that two generalist brains areas, the caudate nucleus and

the putamen, were implicated in the executive management tasks involved in simultaneous interpreting (Hervais-Adelman et al. 2015). This implies that multiple brain areas are involved in the coordination of the different subtasks performed by conference interpreters.

To sum up our discussion on hemispheric dominance during SI, there seems to be a consensus that SI is an exceptionally complex cognitive task which requires a high degree of activation of both hemispheres at the same time, involving multiple brain areas.

4.5. Earedness and Cerebral Lateralisation in Interpreters

Lambert studied simultaneous interpreters' earphone habits to find out what the reason was behind the fact that they "tend to interpret with one headphone placed squarely on one ear and with the other headphone either slightly or completely off the other ear" (Lambert 1994: 319). The findings of her empirical research concluded that "subjects made significantly *fewer* errors when the message was shunted to *one* ear than to *both* ears simultaneously". Moreover, "when interpreting from L2 to L1, right-handed individuals function more efficiently with a left-ear input, and that processing incoming messages through one ear is more effective than through two ears". She offers two explanations for these results.

The first one stems from the tasks a simultaneous interpreter needs to accomplish. It means that "from a cognitive psychologist point of view, interpreters are basically involved in two concurrent activities: listening and speaking, or decoding and encoding. Both activities are verbal and hence one would expect a favouring of right-ear-to-left-hemisphere route for both tasks, which would be neurologically impossible". However, "since the results in the interpretation experiment revealed a marked preference for the left-ear-to-right-hemisphere route, it could be that interpreters favour the right-ear-to-left-hemisphere route to monitor their output". This would imply that "interpreters consciously or unconsciously use their left hemisphere (right ear) for what they consider to be the more critical of the two concurrent tasks, namely monitoring his/her own output, and the right hemisphere (left ear) for processing the incoming information" (Lambert 1994: 325).

The second explanation builds on the differences between bilingual and monolingual individuals as evidenced in dichotic experiments, namely the fact that "bilingual subjects make more use of their right hemisphere than monolingual individuals". This would mean that perhaps "simultaneous interpreters, as bilinguals, employ different strategies in processing verbal material such as using the right hemisphere to a greater extent, than, say monolingual individuals" (Lambert 1994: 325–326).

In her paper on non-linguistic factors involved in simultaneous interpretation, Darò also mentions earedness in connection with the cerebral organisation of attention during SI. Presenting the implication of her empirical study, she notes that "monolinguals

probably tend to process linguistic communication through the right ear, whereas professional interpreters distribute their attention towards inputs to both ears" (Darò 1994: 266). However, this observation seems to contradict the previous one, according to which one ear may be better than two in SI.

5. Conclusion

Lay persons generally associate successful translation and interpreting with linguistic skills and presume that linguistic competence guarantees high quality professional language mediation. There is no doubt that one needs to possess the necessary language skills to become a translator or an interpreter. However, it is only the first prerequisite. In addition, professional language mediation is a complex cognitive task involving language and information-processing and code-switching. For this reason, professional linguistic competence needs to be constructed in a conscious way.

In this paper we have discussed the major factors and research findings concerning professional bilinguals. Although a lot of neuropsychological aspects have already been addressed in this field, the answers are very often inconclusive. In addition to this, there are a lot of questions that need to be asked. As a result, there are several possible lines for further research.

We have seen that professional bilingual competence differs substantially from 'ordinary' bilingual competence. But how exactly do they differ? In other words, can the abilities of an 'ordinary' bilingual be compared to those of a professional bilingual? Are there special training methods for natural bilinguals wishing to become translators or interpreters?

As for the mental lexicon of translators and interpreters, there are still unanswered questions regarding its organisation and structure when it is conceived as the mental lexicon of a professional bilingual person. Does the fact that a translator's or an interpreter's language combination (and mental lexicon) consist of cognate languages make a difference? Or the number of these languages? How can we account for the distinction between active and passive languages?

Another valid research path can be measuring professional linguistic competence. Would it be possible at all? Can we construct a valid and reliable test battery instead of the present 'the proof of the pudding is in the eating' practice, which means that a language mediator's linguistic competence is good enough if it survives translation or interpreting?

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