SIGN AND THE DEVELOPMENT OF BILINGUALISM

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1. INTRODUCTION

In a paper presented at the 8th AILA conference in 1987 I introduced a semiotic-genetic typology of bilingualism derived from elements traditionally used in the study of bilingualism and from the semiotic theory of the ontogenetic development of sign, as presented by L.S. Vygotsky in the 1920's. The typology has thereafter been applied in a series of studies in the research project *Swedish as a second language in the school/Projektet studier över svenska som andraspråk i skolan (ProSSA)* in the Department of Scandinavian Languages in the University of Oulu (for overviews, see Kuure & Siponen 1990 and Pitkänen-Koli & Kuure 1992). A theoretical study, conducted in ProSSA by Kuure & Siponen (1991), provided a systematic comparison of psycholinguistically relevant typologies of bilingualism by various researchers since the beginning of this century. Due to empirical and theoretical findings, a need arose to present the 1987 manuscript in a revised form. The main ideas remain, but a new point of view on the history of the research on bilingualism has been taken. Instead of regarding the scientific development as linear, with subsequent phases or stages, it is viewed as parallel and cyclical, consisting of various relatively autonomous approaches.

It is hoped that the synthetic approach adopted here will offer a useful perspective on both theoretical and applied research. To be sure, there are researchers who express doubts concerning a real need for a typology of bilingualism (cf. Hakuta, 1986:101). In the pursuit of much research a typology or a model is, however, an indispensable theoretical construction. It functions as a guideline for our thinking, as a kind of tool or instrument of thought in the scientific investigation of real phenomena. As such, it helps us to tentatively arrange the seeming chaos which we hope to study. A typology or a model represents real phenomena in an abstract and pure form. As an abstraction is always based on

only certain selected characteristics of the phenomena, any change in the basis upon which this selection is made will result in a difference in the derived abstraction itself. This is the choice that a researcher takes upon him/herself in considering his/her own interests and particular avenue of research. Furthermore, a typology or a model functions as a guideline for the practical application of the results of the scientific research. In this sense, a typology is a unifying link between abstract thinking and practical life.

2. PARALLEL APPROACHES IN THE STUDY ON BILINGUALISM

In the history of the study on bilingualism three parallel approaches can be distinguished. Firstly, "pure" linguistic research aiming at the structural and semantic description of one or the both of the languages of bilingual speakers. Secondly, "pure" psychological research aiming at the construction of models for mental representations of the two languages in the mind of bilingual speakers. Thirdly, interdisciplinary research combining linguistic description with a representational model or a developmental typology. Sociolinguistically and pedagogically orientated research arises out of the pursuit of this presentation.

2.1. Linguistic approaches: disregarding typologies

At the beginning of the 20th century linguists used traditional linguistic theory as their point of reference, and concentrated on the detailed linguistic description of bilingual individuals. The classic works in this field were contributed by Ronjat in 1913 and later by Leopold in the 1940's. Linguistics and psychology were generally regarded as wholly separate disciplines within which researchers pursued differing interests with equally different methodologies. Accordingly, the linguists working in this framework did not experience any actual need for a psycholinguistic typology in arranging their research data. Linguistic descriptions were often conducted as longitudinal case-studies. The provision of extensive background information that typically was gathered in connection with these studies, provides us with a good understanding of the development of bilingualism, often exceeding the limits of the original

research settings. Thus, these studies offer possibilities for re-interpretation of the research data (for overviews, see e.g. Hatch 1978, Hamers & Blanc, 1989). Today, many linguists working in the structuralist tradition, often intuitively regard second language learning as a continuing development of language skills independent of the age of the acquisition. Variation in language skills should primarily be explained by differences in language use in different settings and social networks (see for instance Sundman, 1998:132-133; Korkman, 1990:8; Viberg, 1991:58-60). The most explicit formulations following the "pure" linguistic tradition are to be found among linguists representing the universal grammar theory. According to UG-theory, there are principally no differences between how the first and the second languages are acquired (for overviews, see e.g. White, 1989; Eubank, 1991). This assumption, of course, exceeds the research-field of "pure" or autonomous linguistics. In short, while Ronjat at the beginning of this century did not pose the question of developmental typologies of bilingualism, UG-grammarians today do not like the question!

2.2. Psychological approaches: constructing models of representation

In 1915, the psychologist Epstein presented a typology of bilingualism based on the associationist theory of psychology. Ronjat, who studied successful cases of early bilingualism, regarded the two languages as *autonomous* systems. A detailed account of the studies of Ronjat and Epstein was presented by Vygotsky (1982a:180-187). On the basis of his studies on several unsuccessful cases Epstein posed the question of different types of mental representations in different types of bilingualism. According to Epstein, there are two types of bilingualism, *direct* and *indirect*. In the first case, there is a direct association between thought and the two autonomous languages, whereas in the indirect bilingualism the first language is dominating over the second. Unlike Ronjat's research, Epstein's work is not very well known, probably because of two reasons: firstly, it is available only in French, secondly, Epstein draws pessimistic and, thus, unpopular conclusions from his studies on early bilingualism warning about the potential risks involved. However, as pointed out by Kuure & Siponen (1990), many of the typologies of bilingualism presented up until today bear a great resemblance to Epstein's. For example, Ervin and Osgood in their typology of bilingualism in 1954 discerned two types: *coordinate* and *compound*

bilingualism (1973:16-17). Coordinate bilingualism, the "true" form of bilingualism, was defined as existing when two stimuli in the two different languages create two coordinate and independent representational mediational processes, which in turn lead to two corresponding linguistic responses. In the case of compound bilingualism, only one such representation was theorized. Coordinate bilingualism clearly equals Epstein's direct one. Compound bilingualism in Ervin & Osgood's terms does not precisely mean the same as Epstein's indirect bilingualism, yet in many empirical studies these terms in fact coincide.

To summarize, structuralist theory focuses on the relation between signifieds and signifiers, whereas the behaviourist school concentrates on the representational mediation processes regarding the linguistic sign as a stimulus among other stimuli.

The strength of the linguistic approach has been the methodologically applicable concept of sign, allowing detailed *descriptions* of linguistic structures in the languages used by bilinguals. The strong point in the psychological approach has been the development of representational models aiming at explanations of the language behaviour. The weakness these two approaches share lies in the static view on their research object. The linguists regard the linguistic sign as a fixed Saussurean unit consisting of form and meaning, and the psychologists regard the representation of the two languages in the mind as a straightforward process of associations caused by verbal stimuli. These *structuralist and/or behaviouristic* approaches are even today applied in many studies without much theoretical reflection.

2.3. Interdisciplinary approaches

2.3.1. Linguistic descriptions with psychological explanations

A widely known typology of bilingualism was presented by Weinreich in 1953. Following the contributions of several other writers in this area such as Loewe (1890) and Scerba (1926), Weinreich distinguished three different types of bilingualism: *coordinative, compound* and *subordinative* (1970:9-10). According to Weinreich, coordinative bilingualism is operative if, for instance, the two words /bok/ and /kniga/ exist simultaneously and independently of one another in the mind of an individual so that he/she is able to use both words, and knows what they both denote. This

stage is followed by what Weinreich calls *interlingual identification*. This means that the individual now realizes that the two words denote one and the same thing, a state referred to as compound bilingualism. The transformation of coordinative linguistic units into compound ones is described as occurring constantly.

In the case of coordinative bilingualism, there are, according to Weinreich, two sets of signifieds and correspondingly, two sets of signifiers. In the case of compound bilingualism, following the interlingual identification of the linguistic signs, there is only one set of signifieds, but two sets of signifiers. Following Scerba Weinreich held compound bilingualism to be the "pure" form, and coordinative bilingualism to be the "mixed" form.

Contrastingly, the type of bilingualism which Ervin and Osgood labelled "coordinate" is the "true" one, whereas the compound bilingualism that is equivalent to both the subordinative and the coordinative in Weinreich's terminology, is something else, not "true". This compound bilingualism is, according to Ervin and Osgood, typical of the language learner in school.

Finally, Weinreich's third type of bilingualism, subordinative bilingualism, is the outcome of the successful learning of a foreign language through one's own mother tongue, usually in school.

Weinreich's theory of bilingualism is a sophisticated attempt to develop a typology based on psychological considerations, as well as on the strictly structuralist theory employed in the treatment of the linguistic sign. The crucial point of this typology was the relationship posited between the two components of the sign, the signified and signifier. This relationship was seen as determining the type of bilingualism. Structuralist linguistic theory was expanded in the direction of psychology, though the psychological base remained obscure. The key concept of interlingual identification was left unexplained, applicable only as a working hypothesis. Weinreich's idea of movement and change from coordinative to compound bilingualism is, however, noteworthy in that it can be regarded as the first step beyond static structuralist theory.

Although the actual terms used in describing the different types of bilingualism in Ervin & Osgood's typology are nearly the same as those used in Weinreich's typology, there is a fundamental conceptual difference between these two approaches regarding the role of the linguistic sign. Logically, Weinreich's third type, subordinative bilingualism, is treated by Ervin & Osgood as simply a form of compound bilingualism, yielding a bipartite typology.

2.3.2. Neuropsychological approach: the explicit question of age

The other interdisciplinary approach in the development of bilingualism theory was neuropsychologically oriented. Inspired by the neurological investigations and developmental theories of Lenneberg, McLaughlin presented a new typology of bilingualism in 1978, in which he used two types: *simultaneous* and *successive*. Simultaneous bilingualism, according to this model, is acquired only in early childhood, when a child learns both languages simultaneously from the inception of his language acquisition. If the second language is acquired later in life, the resulting bilingualism is termed successive, for the second language is learned through the first language. McLaughlin posited that the age-border between simultaneous and successive bilingualism lies somewhere around the age of three, a conclusion based on a re-interpretation of the data gathered by Lenneberg (1967).

The neuropsychologically oriented research opened up a new point of view on the study of bilingualism. The cerebral development of the child was made the basis of the typology, and the age of a child was considered to be a significant factor. One problem, however, still remained: can the bilingualism acquired through school education, which Weinreich called subordinative bilingualism, also be regarded as successive? If one answers yes to this question, one is left with a sense of uneasiness - to say the least - yet, on the other hand, if one maintains that there is a difference between these two types, then where does it lie, and how is it to be explained? The question of the significance of the age has since Lenneberg's work been one of the main foci in the development of the theory of the second language acquisition (for overviews see Krashen & al 1982; Hamers & Blanc 1989; Long, 1990; Eubank, 1991).

In considering different typologies of bilingualism that have been presented, we must bear in mind the fact that identical terms, when used in two separate typological systems, do not necessarily have the same conceptual content. Furthermore, different terms may refer to the same kind of phenomenon. Nonetheless, we can still assume a certain degree of agreement concerning the type of bilingualism labelled *direct* (Epstein; Verescagin in Tilli, 1981:23), *compound* "pure" (Weinreich/Scerba; Imenadze in Tilli, 1981:29), *coordinate* "true" (Ervin & Osgood) or *simultaneous* (McLaughlin) bilingualism. This list of terms can be continued with terms used by still other researchers such as *primary*

(Lamendella, 1977:156), *early* (Genesee & al. in Hakuta, 1986:97) etc. as shown by Kuure & Siponen (1990). All these terms refer to a bilingualism characterized by *autonomy* of the language systems as opposed to dependence of one language on the other, expressed in terms such as subordination, dominance or indirectness of one of the two languages.

3. THE DEVELOPMENT OF SIGN IN ONTOGENESIS

In actual fact, the concept of sign is necessarily somehow present in the theoretical constructs that emerge from different research directions, but it has been inadequately defined for the purposes of a psycholinguistic theory. The structuralist theory treats linguistic sign as a unit of the signified and signifier, abstracted from its referent and its context in social reality. The structural definition is in sui generis, static and synchronic. I suspect that in stating this we have reached the crux of the problem. Interestingly, however, both Weinreich's consideration of change and movement, and McLaughlin's concern with the role of the age of the language learner left the concept of sign untouched. So powerful is the influence of the structuralist tradition even today. For our purposes, however, the structural definition is absolutely insufficient. For a reconsideration of this problem, let us briefly examine some theoretical issues, first raised in the late 1920's and early 1930's.

Sociological and pedagogical approaches to the study of bilingualism - which co-exist with the psychological and linguistic approaches - will not be treated here. Researchers from these backgrounds earlier accepted the structuralist definition of sign, and the main focal points of their studies was elsewhere. Nowadays, the concept of sign is often given a functional definition in a sociolinguistic and discourse analytic research (see e.g. Widdowson 1984:125-138; 150-159).

4. VYGOTSKYAN APPROACH ON SIGN IN ONTOGENESIS

We have found ourselves in need of a new definition of the concept of sign. Neither the behaviourist concept of equating sign with stimulus, nor the structuralistic static and synchronic concept of sign is adequate in the study of childhood language acquisition. In approaching this dilemma we are in need of a psychological theory concerning the relationship between linguistic sign and representational processes, taking neuropsychological and developmental factors into account. One research tradition, which provides such a general theoretical structure is the cultural-historical school of psychology, founded by Vygotsky, Leont'ev and Luria in the late 1920's. Its epithet, "cultural-historical", derives from two of its fundamental principles. First, that the human being is, in his/her essential nature, *social*. Human beings create their culture through interaction with other people, and in so doing also create themselves as human beings. (The term culture is used here in a broad sense, referring both to material and intellectual activity.) Second, the creation of the human being and the development of culture are - according to the tenets of cultural-historical psychology - understandable only through a historical consideration of the different qualitative phases in the history of culture and in the history of phylogenetic as well as ontogenetic development. Language, along with other semiotic systems, is regarded as a product of socio-cultural activity, the primary aim of which is changing nature to better meet the needs of human beings. On the other hand, however, language and other semiotic systems are seen as being prerequisite elements for the further development of social activity and human intellect.

From our point of view, the cultural-historical school of psychology provides us with two principles of fundamental importance: language is primarily a social phenomenon, and the acquisition of linguistic sign is best analysed genetically (developmentally), as a process with qualitatively different phases. To be sure, there are other applications of Vygotskyan general theory on various human sciences (see e.g. Wertsch, 19). Furthermore, Frawley (1987) has been applying Vygotskyan theory on text- and discourse analysis, not to mention A.A. Leont'ev's (1982) studies in psycholinguistics. Karkama (1992) has been developing theory of literature using the Vygotskyan *functional-genetic method* as the point of departure.

Every once in a while, while researching some theoretical problem, one comes across an article or a book which seems to be the missing piece of a jig-saw puzzle for which one has been searching for a long time. Such was my experience in reading Vygotsky's article, "Legen og dens rolle i barnets psykologiske udvikling" (1982b:50-71; English language translation: "The Role of Play in Development" 1978: 92-104). This work was first presented as the transcript of a lecture given by Vygotsky in 1933. It was first published in "Voprosy psikhologii" Nr 6, 1966, id., thirty years after Vygotsky's death; ars longa, vita brevis.

In his lecture Vygotsky describes, how a child acquires a sign in the course of his/her play. He furthermore demonstrates the important role of a child's play activity in the ontogenetic development of sign. A child's play is seen as always possessing a social element, whether the child plays alone or with others. Furthermore, children's toys always have a social meaning, a social element and their own cultural and historical background.

Vygotsky claims that there is a transitional intermediate phase in the development of sign, lying between the signal and symbol phases.

Figure 1. Development of sign in ontogenesis (A)

SIGNAL   ->   INTERMEDIATE PHASE   ->   SYMBOL

From our perspective, this claim is most interesting. It is noteworthy that a Finnish psychologist Kaila, a contemporary of Vygotsky's, arrived at the same kind of conclusion, but, as Reinikainen (1979:86) notes, Kaila did not develop these ideas any further, theoretically oriented as he was. Later, Piaget also arrived at similar conclusions, but he saw the development of sign as being only a logical structural phenomenon (Piaget & Inhelder, 1977:56). This interest by psychologists in the concept of sign seems to have been inspired by neo-Kantian philosophy, such as presented in the works of Ernst Cassirer (1964).

The crucial problem in the treatment of sign lies in depicting the transition - including intermediate phases - of signals into symbols. In the course of this transition, the sound substance is given a symbolic meaning. The sound substance /horse/, for example, is given the symbolic meaning *horse*, which denotes a certain class of real phenomena, and refers to a certain object in a given situation.

Figure 2. Development of sign in ontogenesis (B)

/ HORSE /   ->   INTERMEDIATE PHASE   ->   *HORSE*

In his lecture, Vygotsky described the crucial intermediate phase in the development of sign in the following way: if a child, in the course of his/her play, uses a stick to represent a horse, the relation between the stick and the horse will be, at this early stage, context-bound to the immediate situation. The material carrier of the meaning *horse* is the dominant element in the play. The material carrier, the stick, with its form and substance, is the dominant element of the sign denoting the phenomenon horse. This relation can be illustrated as follows:

Figure 3. Development of sign in ontogenesis (C)

$$\frac{\text{STICK}}{\text{HORSE}} \quad : \quad \frac{\text{THING / MATERIAL CARRIER}}{\text{MEANING}}$$

In this intermediate phase, the stick (or whatever physical object is used as the material carrier of a certain meaning) is the dominating element in the structure of sign. The material carrier is context-bound to a certain situation. It cannot be substituted with another physical object, and it cannot be used as a sign for any other phenomenon. Using the terms of de Saussure (1970:33; 95-98; 101-102), at this early phase a sign is *neither arbitrary nor conventional.*

This intermediate phase in the development of sign is, in general, manifested in a child's play and in his/her use of toys. It logically follows that *a linguistic sign undergoes the same developmental phases as signs in general.* A linguistic sign carries the same characteristics as a toy in a play: it is social in origin, and it is used both as a mediating and meaning-carrying instrument in human activity, and as an object of that activity.

After this intermediate phase a sign goes through a fundamental structural and conceptual transformation. This occurs, according to Vygotsky, when a child is of preschool age, between three and seven years old. At this age, the meaning of a sign becomes the dominant element. The relation between the material carrier and its meaning in this phase can be illustrated as follows:

Figure 4. Development of sign in ontogenesis (D)

$$\frac{\text{HORSE}}{\text{STICK}} \quad : \quad \frac{\text{MEANING}}{\text{THING / MATERIAL CARRIER}}$$

At this stage a child is free to use almost any physical object to denote a particular real phenomenon. The physical objects themselves may be freely interchanged. The stick, which before had been used to denote a horse, may be used to denote a dog or a person etc., and when no suitable stick is available, a cane (or whatever else is at hand) may function as a horse in the child's play. The meaning, *horse*, has now replaced the material carrier of the meaning, the stick, as the focus of attention. A sign has thus become a symbol; it is arbitrary, not bound to any immediate situation or physical object, and conventional, it can be used to denote different phenomena. A well-known fact for every parent is the freedom of the choice the child has when selecting sticks, fir-cones, stones, leaves or whatever to denote horses, cows, sheep etc. in a play.

Vygotsky expanded his ideas about the transformation of signs during a child's pre-school years to include play-activity as a whole (1978). During the early stages of a child's development, a child's play-activity is dominated by the context in which it occurs. As the child grows, his/her play becomes increasingly independent of the context, and thus increasingly symbolic. This development can be illustrated in the following way:

Figure 5. Development of play in ontogenesis

$$\frac{\text{SITUATION}}{\text{PLAY-ACTIVITY}} \quad \rightarrow \quad \frac{\text{PLAY-ACTIVITY}}{\text{SITUATION}}$$

In light of these observations, Vygotsky concluded that play is a leading, but not dominating element in a child's intellectual and linguistic deve-lopment (1982b:69). Vygotsky thus succeeds in linking the development of sign with the development of play - or human social activity - and thereby breaks through the limits imposed by a static structuralist concept of sign.
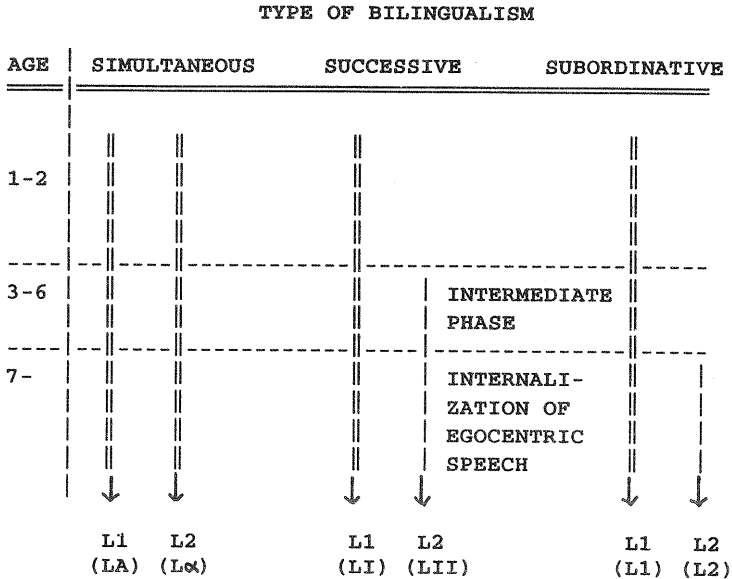
Vygotsky's ideas regarding the ontogenetic development of sign are in full accordance with his own theories on cerebral development, which he introduced in the 1930's. Moreover, the results obtained by Luria (1980) - one of the founders of neuropsychology - in his wide-- ranging clinical and theoretical research are in no way at variance with Vygotsky's theory of "the natural history of sign" (the author's terminology: 1978:46). The brain, in the course of its neurological development, goes through several stages of growth, the attainment of each seeming to trigger, or function as a precondition for the attainment of new phases in the intellectual development, including the acquisition of language. The study of the interrelationship between physiological and social maturation poses a great challenge to researchers in many fields. In the sphere of linguistic study, this interrelationship is of particular importance in applied linguistic research, through which much can hopefully be contributed to a general understanding of the social dynamics of a human being.

5. THE SEMIOTIC-GENETIC TYPOLOGY OF BILINGUALISM

In our examination of language thus far, we arrived at three fundamental conclusions, none of them in itself particularly surprising. First, language is a socially and culturally determined phenomenon. Second, it is a system of signs which undergo transformations in the course of onto-genetic development. Third, language is a psychological phenomenon, which must be studied through a consideration of the developmental stages leading to its acquisition by a human child.

Based on these theoretical considerations concerning the nature of language, and on previous typologies of bilingualism, I have developed the following typology, which we might refer to as semiotic-genetic typology. It is semiotic because the concept of *sign*, forms a fundamental criterion for the typology. It is genetic because the developmental *changes* and qualitatively different *phases* which the sign undergoes during ontogenesis form the other criteria for the typology.

Figure 6. Semiotic-genetic typology of bilingualism

TYPE OF BILINGUALISM

AGE	SIMULTANEOUS		SUCCESSIVE		SUBORDINATIVE	
1-2	‖	‖	‖		‖	
3-6	‖	‖	‖	INTERMEDIATE PHASE	‖	
7-	‖	‖	‖	INTERNALI- ZATION OF EGOCENTRIC SPEECH	‖	
	↓	↓	↓	↓	↓	↓
	L1 (LA)	L2 (Lα)	L1 (LI)	L2 (LII)	L1 (L1)	L2 (L2)

For the sake of convenience, the two languages are labelled L1 and L2 throughout. The labels which I have placed in brackets at the bottom of the figure are suggested as more precise alternatives. Rather than trying to coin new terms for each type of bilingualism, I have chosen to re-define suitable old ones, borrowed from different sources.*

> In practice, three factors determine the type of bilingualism developed by a particular child: the social environment in which the child learns the languages, the age of the child when he acquires another language and the semiotic factor, viz, the relative dominance of one language over the other in various types of social activity.
> 1. I have termed the first type of bilingualism *simultaneous bilingualism*, following the terminology used by McLaughlin.
> 2. The second type of bilingualism, again in accordance with McLaughlin's typology, has been termed *successive bilingualism*.

3. The third type of bilingualism, *subordinative bilingualism*, follows terminology used by Roberts and Weinreich.

Preconditions for the development of *simultaneous bilingualism* are:

a) Social environment: home is bilingual, and primary care-givers talk with the child exclusively in their own language.

b) Age: the child begins learning both languages from the very beginning of his/her language acquisition.

c) Semiotic factor: the child acquires both languages simultaneously, and neither of the languages is dominant at home, neither in conversation, play nor in other activities.

Preconditions for the development of *successive bilingualism* are:

a) Social environment: the home is unilingual, with L1 dominant, but L2 is used in play-activity and in communication with peers and adults who are speakers of L2.

b) Age: the child is between 3-6 years old.

c) Semiotic factor: L1 is acquired before L2, with L1 dominating in conversation, play-activity and other activities. L2, though, has relative functional independence. L1 is thus the dominant language, but L2 is acquired during the intermediate phase in the development of sign, between the signal and the mature symbol phases.

Preconditions for the development of *subordinative bilingualism* are:

a) Social environment: the home is unilingual, and L2 is learned at school as a foreign language. There is no significant use of L2 outside the school.

b) Age: The child begins learning L2 when more than 6 years old.

c) Semiotic factor: L2 is learned through L1, at a time in which the development of sign has reached the phase of the mature symbol.

This typology presents the types of bilingualism in their abstract, generalized, simplified and idealized "pure" forms. There is reason to emphasize a few issues. An essential point concerning simultaneous bilingualism is that neither of the two languages is dominant, in other words there form two *autonomous* languages systems. In the case of successive bilingualism, L1 is the dominating language, but L2 has *relative functional autonomy*, i.e. L2 possesses the same semiotic functions as L1: it is used

in spontaneous communication in play-situations and in conversations with native speakers. The age of acquisition of L2 in the development of successive bilingualism is given as from 3-6 years old, a wide margin, perhaps, but, at present, necessarily so. In the case of subordinative bilingualism, it is obvious that L2 cannot have the same functions as L1 until the child has reached a very advanced level in his/her study. The semiotic-genetic typology theoretically supports the general idea of *the developmental interdependence hypothesis* suggested by Cummins (1979: 233), according to which L1 forms the basis for the development of L2. However, Cummins' hypothesis needs the following modifications: in case of successive and subordinative bilingualism, the first, dominant language forms the basis for the development of both LII and L2, whereas in case of simultaneous bilingualism, parallel autonomous development of the two languages is assumed. Furthermore, the inter-dependence between L1 and LII in the successive bilingualism, and the interdependence between L1 and L2 in the subordinative bilingualism are assumably of different quality.

To summarize, in addition to Epstein's original distinction bet-ween direct (autonomous, simultaneous) and indirect (non-autonomous, subordinative) types of bilingualism, a third type, successive bilingualism, characterized by functional autonomy, is suggested. The criteria of the typology, of course, differs profoundly from Epstein's.

6. SOME EMPIRICAL FINDINGS

It is important to stress that the type of bilingualism operant in the language acquisition of a given individual does not necessarily bear any precisely definable relationship to his/her performance as a bilingual speaker. If one only listens to an adult bilingual speaker, it can be hard to define the type of bilingualism present. However, the question can be posed, if any particular language specific traces remain as an evidence of the age of the acquisition of the second language.

As presented in the methodological scheme for empirical research by Siponen & Kuure (1990) there are three main foci of attention in the research project ProSSA: Firstly, error analysis of school essays has been applied in order to search for the assumed traces due to the acquisition of Swedish as a second language in different ages (Ahola & al, 1991; Kuure & Kuure 1990; Kuure, 1992b). Secondly, analysis of semantic fields, lexical density and syntactic structures has been used to compare

the different types of bilinguals concerning their language skills in writing (Lehtiniemi & Pallari, 1992). Thirdly, analysis of written and oral discourse aims at discovering culturally bound characteristics in language use (Huovinen & Kuure, 1987; Kataja & Kuure, 1991; Kuure & Sandbäck, 1991; Siponen, 1992; Kuure, 1992a). Furthermore, a multi-level analysis of cases with dysorthographia has been conducted by Kuure & al (1991). So far the empirical findings support the theoretical premisss summarized in the form of the semiotic-genetic typology of bilingualism. Thus, the simultaneously bilingual Swedish-Finnish and Finnish-Swedish children in the age group 14-16 differ very little from their Swedish speaking peers in respect of linguistic structures. Interestingly, some culturally bound characteristics seem to distinguish the groups from each other. The successive group, having acquired Swedish as a second language, has achieved a very high level of language skills in general, and have no noticeable accent in their Swedish pronunciation. However, the Swedish-Finnish youngsters differ from their native peers in their way of writing essays as well as the style of conversation. According to a study by Kuure (1992), the successively bilingual group commits a few errors in *gender* and in *in/defineteness*. Furthermore, the subordinatively bilingual study group frequently commit errors in the choice of letters, implying a certain inability to discriminate Swedish *phoneme quality*. Keeping in mind that this research work is still in progress, the error analysis seems to have revealed what is assumed to be the most prominent remaining structural traces in Swedish as a second language of Finnish speakers, specific to the developmentally different types of bilingualism.

7. FURTHER RESEARCH AND APPLICATIONS

The typology presented here raises both theoretical and practical questions. First, whether there is any psychological basis for the three types of bilingualism described. Second, whether there are any practical consequences of using such a tripartite typology. Third, whether the typology itself will require the use of further distinctions or subdivisions.

As such, the typology offers a new perspective on quantitative and qualitative linguistic descriptions of different levels of languages, concerned both with normal and disturbed language development. Furthermore, a very interesting possibility is that advances in neuropsychology may enable researchers to identify differing types of neural process-

ing systems that may correspond to the different types of bilingualism. The pedagogical consequences of this typology are obvious. For the last two decades there has been much heated discussion concerning the need for some form of special education for the children of immigrants and other minorities. It has been claimed that these children require a new kind of didactic approach in learning the language of the majority at school. The implication of the typology presented here is that a distinction should be made between the mother tongue, a second language and a foreign language. This is, of course, not a new idea at all, and it has been suggested for some time by, amongst others, Tingbjörn (1983: 11–12). So far, the theoretical psycholinguistic considerations regarding this distinction have been unsatisfying. I hope that the new typology presented above might shed some new light on that problem by providing the theoretical basis for a distinction between L1, LII and L2. There has been, and continues to be, much empirical research in this area, but interpretations of the results often lack adequate theoretical grounding. Since migration across linguistic frontiers has been increasing greatly throughout the world, there is widespread acknowledgement of the fact that research on bilingualism and its acquisition - including pedagogical and didactic methodologies - is of great importance. Moreover, as has been much discussed in Finland, special teaching methodologies are also required in the case of simultaneously bilingual Finnish-Swedish children, who, at present, are taught one of their mother tongues as a foreign language!

At this point it is interesting to ask whether there may possibly be other types of bilingualism beside the three presented here. Above all, the question of the need for subdividing the successive bilingualism type merits some further consideration. As posited above, subordinative bilingualism is acquired after 6 years of age. It is also the age period that has been a focus of much pedagogical discussion. It appears that - as has been claimed by, amongst others, Skutnabb-Kangas (1981:115) - there is a particularly great risk of overestimating a bilingual child's language proficiency during this stage of his/her life. At this age, a child can be a very fluent communicator in his/her second language, while his/her intellectual development - which according to Vygotsky (1987: 101-120) is intertwined with language development - is disturbed by the change of balance between a child's two languages. This idea is supported by the fact that the internalization of external egocentric speech takes place during this period in a child's growth, so that the crucial linguistic and intellectual developments take place internally, while there

may be only little externally observable sign of change. The development of verbal conceptual thinking and what Vygotsky (1987:167-242) calls "scientific concepts" during this age-period possibly has some significance regarding the structure of linguistic sign, but empirical evidence is needed to clarify this issue.

The existence of three different main types of bilingualism, simultaneous, successive and subordinative, defined on the basis of the ontogenetic development and acquisition of sign in different social environments, can be explained through a synthesis of different research traditions in the study of bilingualism, and the Vygotskyan general theory of the development of sign. Further subdivision of this typology, as well as detailed descriptions of each of the types, requires further empirical research and re-interpretation of old results. A neuropsychological basis for a typology of bilingualism has to be developed through interdisciplinary research. The pedagogical implications of this new typology, including the question of the need for differing pedagogical approaches for children who manifest different types of bilingualism, also demands further investigation. As the social and scientific significance of bilingualism becomes increasingly apparent throughout the world, the need for a remarkable contribution in this area of applied linguistics presents an urgent and challenging goal to future researchers.

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* The indented passage follows a presentation by Kuure & al (1992).

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