FONDEMENTS

BILINGUALISM – TO TERM THROUGH CONCEPT

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Abstract:
Human beings perceive reality in a sensorial manner; they become aware of it, analyse and reflect it rationally and intellectively, and then express it through language. Due to the repetitive occurrence of these processes, having reached a certain threshold of experience, humans may weave various ways to designation, often passing through stages briefly and intuitively – or even short-circuiting them in a glossocentric manner. This generates words in which past sensorial experiences and mental processes built on previous (sensorial, mental, linguistic) experiences entail the present ones.

Keywords: Bilingualism, conceptualisation, dynamics of the living**.**

Perception, knowledge, designation.

Things happen in this manner whether it is individuals who pass through the same experiences and undergo similar sensory, rational and linguistic states or whether it is individuals who share their experiences and then negotiate with regard to results. At the same time, both types of linguistic results will be passed on inter- and intra-generationally in order to suggest such sensorial and rational states[1].

Common language / scientific language. This way of linguistic reflection of the results of perceiving and conceiving the real world, and then of its approximate transmission is enough for all systems to function for the speaker of the common language in its current register. The situation is not as satisfactory when it comes to scientific language. Unlike the requirements and roles of the common register, the scientific language must render knowledge

[1] Dor 2015.

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at specialised levels, in nuanced and precise ways devoid of vagueness and equivocalness. This is because scientific language takes it upon itself to faithfully and transparently render reality and the linguistic outcomes of its pondered understanding. Therefore, the terms employed should have the ability to truthfully and accurately render the conceptual results of rational refinement of reality.

Just like the current manner of perceiving reality and just like the kind of thinking underlying it, common language rather uses continuous designations, as its levels and degrees of linguistic identification are not too high. This type of communication takes shape within the boundaries generated by the needs which the goals of communication at this level impose. The inherent shortcomings thereby arising are largely neutralised by the predominantly oral nature of this communication type – the overwhelming majority of information being conveyed visually (especially through gestural, facial and body languages) and auditively (particularly dynamic, musical accent, rhythm, intonation). Furthermore, the needs of users of this kind of communication do not require too strict segregations and communication adjustment procedures are within their reach.

Fulfilling other sorts of needs and setting other goals, scientific language mainly employs the discontinuous denomination, for it aims to accurately identify, define, describe and disseminate the sequences and elements it finds and uses in its constructions. Moreover, its generally written nature requires that the discourse be furnished with linguistic patterns and markers that should clearly express all there is to be expressed, as writing does not have sensorial aids such as those of speech. (In fact, even in its oral instance, scientific language follows and imitates the ways proper to writing). In this respect, common language is analogical, while scientific language is digital.

> „*It is true that, as a rule, language as a system of communication does not offer too much, as its refinements follow those of thinking – which it often ignores –, but, nevertheless, the effort of scientific language users is often much greater when utilising insufficiently processed terms than the labours of conceiving accurate terms – a refinement that would represent the dynamic and adaptive adjustment of language to the results of thought processes*".

Below, we shall deal with one of the many situations in which scientific language uses and disseminates a term that has not passed the level of the common language. We shall refer – separately and jointly – to the

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general, defining and identifying features of bilingualism, for their correct understanding needs constant contextualisation, nuancing and differentiation, which can only be drawn from the accurate observation of reality they must faithfully present and reflect.

Conceptualisation. Although no one probably thinks of bilingualism as a uniform and homogeneous state, discussions about bilingualism are generally held from its ideal perspective, often apparently ignoring that it knows degrees, not completeness.

To gain knowledge, the mind can use ideal constructions, by which it imaginatively prolongs the data typical of a reality beyond its concrete and true limits, or extends the fields of a process beyond the amplitude, manner, and intensity of its real actions. The operationality of such an act – and of the working definition generated by such a perspective – lies in the fact that, when they are hard to quantify and enclose in frames that should bring along understanding, the avatars of reality are replaced in the first stage by an imaginary that becomes a landmark and an adjuvant suggesting the purest and most intelligible state of that particular – existent or non-existent – reality. Thus reality, complex and often confusing to the human mind, is idealised and simplified. By this false hypothesis method an ideal image is projected, from an ideal perspective, and around this image a fabric is constructed to help operate the adjustments unavoidably following reality. Through such successive references, reality can be better analysed and the premises of understanding it gradually develop. Naturally, the ideal imaginary has to later undergo corrections that will either identify it with reality or discard it.

In this way, following the initial, empirical-inductive operations, the human mind passes through an imaginative-ideal stage, ensued by alternative series of rational reconsiderations of reality and operations valorising both experiences and the initial knowledge. Such adjustments lead to the comprehension and understanding of reality, while real knowledge comes only with – and is announced by – the sacrifice of the ideal mental projection, after which a conceptual faithful copy of reality emerges. On the contrary, preserving the ideal projection – in fact, the result of approximations produced by intuitions that unrefined experiences have generated, possibly in conjunction with some cogitations thereby deriving – will sacrifice a potential

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fruit of knowledge in the bud and will keep the idealised form of that first layer resulted from the empirical-inductive contact of the human being with reality[2].

Bilingualism knows a variety of definitions with various degrees of intensity and extension[3], which reflects not only the perspectives of those that have thought about it, but also the complex nature of the phenomenon (as against the danger of fixing it within coarse frameworks which ignore the states and dynamics of reality or take heed only of some of their features).

On the other hand, reality shows that there are various degrees of bilingualism, except the total one. Consequently, the only view that would be unrealistic – for it lacks the firm and reliable correspondent that should contain and confirm the reality – is that which would consider the perfectly equal mastery of the native tongue and of a second language. However, if total bilingualism is an imaginative construction serving to understand real bilingualism, it finds such a justification.

Age and community. Given that the relevance of particularisms exceeds that of mere curiosities – but not that of features that are fundamental and generally valid for a class of elements or processes –, the main factor of the discussion about bilingualism is age[4], not the possible special abilities of individuals, conditions and particular frameworks and – in certain respects – not even the individual differences among them.

> „*The entire discussion that follows refers in particular to the common speaker, the member of an ordinary community, living in average conditions, not to one who is always careful about language and about speech, or to the educated one who aims to systematically learn a language or one who has a «language talent». We believe that the great obstacle to clarifying the conceptual cores and their essential aspects is the obstinate insistence upon the peripheral, exceptional, even aberrant situations, which are however impossible to include in the essence of the processual work or flow that is sought to be understood. Such an approach creates an insurmountable obstacle because the knowledge of*

[2] Vaihinger 2001.
[3] Selinker 1969; 1972; Krashen 1981; Thomason & Kaufman 1988; Preston 1989; Gordon 2000; Fierro-Cobas & Chan 2001; Harmers & Blanc 2004; Gass & Selinker 2008; Paradis *et al*. 2011; Zevin 2012.
[4] Werker & Tees 1984b; Genesee 1989; Genesee *et al*. 1995; Flege *et al*. 1999.

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peripheries may become real – and may even help fully understand the core – only after a reasonable understanding of it has been reached.
This situation is due to the fundamental fact that the entities of reality are composite, their unity and coherence being given precisely by the manner in which the elements are composed, and its understanding – however devious the paths leading there may be – comes only after reasonably understanding the core and the distinction between the fundamental particular and exceptional features".

Such an approach is due to the fact that – as we shall see – the learning process carried out by means of perception and of the production of language sonorous flows is strongly influenced by age-induced features. This is related to the essence of the learning and language use process, the ultimate test of the force of bilingualism, as compared to monolingualism, being provided by those prone to becoming specialised bilinguals or even to easily abandoning the native language – the children. This happens because children are beings who exhibit a high degree of plasticity and variability and their adaptability is increased by the particularity that, the further the process of learning the language of the milieu advances, the harder it is for them to lose the abilities to be influenced by other environments[5]. Therefore, in order to find and understand the natural and common types of bilingualism instances, the fundamental reference point will be the linguistic behaviour of children and its effects.

Also, given that the vocal-articulated language is a biosocial epiphenomenon, which - though found in individuals, by the ways in which it forms, acquires, functions, develops and evolves, as well as through its functions – is socially determined, the framework we shall have in mind is that of the community.

Native language. Although the current situation is no longer exactly the same as that attested in previous periods and even if we do not believe that the phrase *mother tongue* is wrong, whenever we refer to the natural

[5] Bergman 1976; Ben-Zeev 1977; Eilers *et al*. 1979; Genesee 1989; Galambos & Goldin-Meadow 1990; Lanza 1992; Genesee *et al*. 1995; Thompson 1999; Petitto *et al*. 2001; Escudero 2005; Hammer *et al*. 2007; Poulin-Dubois *et al*. 2011; Zevin 2012; Hambly *et al*. 2013; Core & Scarpelli 2015; Palomar-García *et al*. 2015; Román *et al*. 2015.

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language by means of which the faculty of vocal-articulated language is activated, we shall use the phrase *native language*.

It is more than reasonable to admit that language learning has always been done, in absolutely all concrete cases, through the mother tongue and not exclusively or predominantly by it, as the first phrase would suggest. This means that various socio-cultural events – that later on became custom – could lead to situations in which individuals would start their linguistic initiation following the contact with a person other than the biological mother. But the most important aspect is that, perhaps, in any society children will not learn the language under the exclusive influence of a single person – even if we assume and admit that during the first months or even the first year the most intense and prolonged contact is with their mother, who nurses them and whose instincts prompt her to take care of, feed and protect her offspring.

Like many other concepts that have entered the scientific terminology, *mother tongue* suffers from fundamental inexactness only because the purpose of uniformly rendering a non-uniform, nuanced and varied reality is impossible to fulfil. Besides, many such phrases were coined in times in which knowledge started rather from cultural patterns and prejudices, which would encumber not so much their functionality as their accuracy. As for us, we still believe that despite an increasingly nuanced reality and inherent lacks of content the phrase *mother tongue* points to the main and current source of language learning, for a quite significant cultural and areal majority.

> „*Other phrases may accurately refer to some real source or another precisely because they can be strictly delimited, that is, they have an insular nature. Even in terms of the phrase we are going to use further, one might deem that, just as it is possible for an individual to have lost their mother or been neglected by her etc,, it is equally possible for them to have been transplanted from the native environment to another etc., but we shall not follow this path*".

Therefore, starting from the dominant position of the phrase *mother tongue* and considering that it may better function in many other terminological conventions, we shall use *native language* with reference to the natural language an individual is equipped with, after previously perceiving it during the intrauterine life then perceiving and learning it in the first years – continuing throughout their life – from the people constantly or sporadically present in their environment (who speak the same *native*

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language), regardless of the fact that they will or will not acquire another natural language or that individuals in their milieu speak a different language or not. We prefer this phrase only because it comprehensively refers to the environment, enclosing space, time, heredity, society, culture, behaviour – that is, the entire ensemble that counts –, not only to one of the possible biosocial relationships.

Monolingual mode. Acquiring and learning human vocal-articulated language is a process which occurs after the perception and exercised production of a natural language given by birth within a certain community. That language was also developed by the community, by means of complex interactional processes occurring throughout time in a limited geographical space, within a relatively unitary and coherent community, cultural and mentality-specific framework that is subject to environmental variables (be they geographic-historical-social, cultural-spiritual, psycho-mental etc.). This complex framework and the ways in which the process unfolds are factors which evolve in the dynamics and boundaries of their relations with superordinate factors as well as with the results of the entire process. Therefore, all factors involved co-evolve, though in their own manners and at their own pace.

Considering how the process has unfolded in the thousands of years of which we have some knowledge as well as the estimates referring to the emergence of the biosocial behaviour and of the communication tool called *vocal-articulated language*, taking into account what has happened so far and finally reflecting upon the level of development and biological equipment of the human being, we shall consider that the natural and current mode of acquiring and learning the linguistic behaviour and such a "communication technology"[6] is the monolingual one.

Whatever its shape (vocal or gestural), the early language acquisition and then exercise are important advantages, as the demands of the language learning process entail the development of extensive brain processes of specific neural organisation and brain imprinting (a process whose efficiency is proportional to the early, intense and frequent nature of exercise) both in structural and functional terms[7]. Also, in the case of the vocal-articulated language, organisation processes occur in parallel and orient what is to

[6] Dor 2015.
[7] Strange 1995; Neville *et al*. 1998; Doupe & Kuhl 1999; Berken *et al*. 2016.

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become the voice box in this direction, later on acquiring features induced by the ways of articulating actual sonant flows specific to the community the individual belongs to.

Then, under normal circumstances, the usual practice of the native language is coupled with the slow alteration of the perceptive abilities, of the discriminatory abilities to distinguish other languages and of the skills in acquiring (roughly just as easily and at the same qualitative level) a second language – a process accompanied by the enhancement of those skills for the native or the environment language[8]. Thus, following the natural channelling of energies into native language acquisition, children become more and more receptive to elements that fall under the acquired pattern, which includes all sorts of indices: initial and final syllables, stress, sound peaks, length, intensity, gravity, prosody, rhythm, musicality etc. (all phonetic parameters), frequency, repetition, associations (i.e. the mechanisms that brain and living matter use for perception, acquisition, learning, memorisation) – all important[9]. Essentially, the harder and more accurately one practises a language, the better the speech organs and brain develop in that direction, the result produced by the activity of the organs being shaped through frequent and intense use[10]. Finally, raising the children's awareness of the static sound distribution of the language they hear leads to the neural engagement oriented towards the language of the environment, which generates neural networks that encode the speech patterns in that particular language[11].

> „*Experiments involving monolingual and bilingual children younger than 12 months, who processed (native and non-native and non-linguistic) auditory stimuli, have shown that the bilinguals were sensitive to non-native phonetic contrasts, unlike the monolinguals, who would lose their discriminatory skills at a fast pace.*

[8] Newport *et al*. 1977; Burnham 1986; Werker & Lalonde 1988; Vihman & de Boyson-Bardies 1994; Tsao *et al*. 1994; 2004; Guion 2003; Todt 2004; Esposito 2010; Chládkova & Podlipský 2011; Byers-Heinlein & Fennell, 2014.
[9] Souza *et al*. 2013.
[10] Kirby & Hurfort 1997; Brainard & Doupe 2000; 2000a; Janik & Slater 2000;Merker 2009; Tschida & Mooney 2012.
[11] Gatbonton 1975; Rosch 1978; Werker & Tees 1984; Genesee 1989; de Houwer 1990; Köhler 1996; Snowdon & Hausberger 1997; Garbarini & Adenzato 2004; Garbin *et al*. 2010; Holt & Lotto 2010; Strange *et al*. 2011; Pons *et al*. 2015; Gómez 2017.

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Although initially sensitive to a wide range of sonorous and phonetic contrasts – i.e. initially endowed with the ability to perceive various sonorous contrasts between the native (exercised) language and another –, children who become monolingual speakers of the native language narrow their skills for phonetic perception of non-native contrasts, losing this feature rather quickly – in proportion to the intensity of the directed exercise –, which is useful to the practised way of living[12]*. In their turn, bilinguals, who practise a wider range of contrasts, preserve their skills (for these contrasts) – also in order to be able to cope with their own needs*".

Bilingual mode, its states and dynamics. If the common exercise of the native language is accompanied by a relatively regular and contextualised exercise of another language, children – that is, the human individuals most capable of naturally acquiring a second language – may make up for the decline in the perception and production of that particular language, especially during social interaction, which generally has a massive contribution to learning[13]. This is because the degree of plasticity of their speech organs and of their neural ensemble is close to the initial one, as the second level is that where the various reorganisations needed for the development of the second language use process are being produced, much more easily at younger ages. Furthermore, the decline in the perception of another language than the native one or that of the environment is slower in children and exposure to another language can still slow the entire process down.

But the bilingual mode knows two types, both important and relevant to this discussion. The sequential is the most common one and refers to children who acquire L2 after they succeed in having a relatively reasonable command of the native language. The simultaneous type, which is rarer, is that when the child acquires two languages, usually the native one and another one, at the same time.

The experimental study of the effects of L2 learning on brain structure – involving 22 monolinguals and 66 bilinguals (some of whom, aged 0-3, had learned both languages simultaneously and the others, aged 4-7 and 8-13, after managing to master the mother tongue) – points to differences between the two last categories, in terms of the cortical thickness (measured using the

[12] Petitto *et al*. 2012; Byers-Heinlein & Fennell 2014.
[13] Kovács & Mehler 2009; Bialystok 2017.

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MRI). Thus, the cortex of children who had learned L2 after acquiring their mother tongue changed in terms of thickness, i.e. it increased at the level of the left inferior frontal *gyrus*, as compared to its right side[14]. (In this way, it is confirmed once more that the age at which L2 is learned does count.) When learned sequentially, L2 demands a higher brain capacity, which is supported by observations showing that changes and "recruitments" of brain portions occur in the encephalon of these bilinguals[15].

The comparison between the simultaneous and sequential bilinguals generally points out that early linguistic experience and its variations over time differently shape the functional brain connectivity patterns. (Therefore, in terms of cognitive control and brain efficiency, it is more efficient for one to learn L1 and L2 at the same time[16]).

The comparison between monolinguals and simultaneous bilinguals (incomparably closer to monolinguals than the sequential) indicate various differences at cerebral level (for example, there are differences in terms of the blood flow, because in the case of bilinguals a component of the basal ganglia, namely the left putamen, is activated for linguistic purposes[17], as well as variations in other cerebral areas, some of them not usually involved in language, which naturally entails an increase in brain oxygenation, as opposed to monolinguals[18]). But unlike sequential bilinguals, in simultaneous ones it is rather the organisation of the language in the brain that changes[19].

Even so, although there are specific L1 and L2 cortical areas – common to simultaneous bilinguals and monolinguals –, in the case of bilinguals there are also distinct areas (L2 being located exclusively in the temporal and parietal regions), whereas the areas for L1 and L2 are functionally different, as there are regions dedicated exclusively to L1, but "forbidden" to L2[20]. Therefore, it may be considered that, in general, despite all similarities to monolinguals (as compared to sequential bilinguals), simultaneous bilinguals possess their own development patterns in order to cope with specific needs. (This situation is actually seen in individuals

[14] Klein *et al*. 1994; 2014.
[15] Jasinska & Petitto 2013; Klein *et al*. 2014.
[16] Berken *et al*. 2016.
[17] Klein *et al*. 1994.
[18] Kovelman *et al*. 2008; 2009.
[19] Kovelman *et al*. 2008a; b.
[20] Lucas *et al*. 2004.

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exposed to other types of demands and skills than those formed following the command of linguistic systems.).

Beyond all this, whether one refers to sequential bilinguals (rather different from monolinguals) or to simultaneous ones (quite similar to monolinguals), as shown by the case of bimodal bilinguals (which master both the vocal and the sign language), the basic structure is that given by the functional neural network of L1. This plays a crucial part in the formation and shaping of L2, its demands being complied with only as a result of its reorganisation[21]. For this reason, when learning a second language, it is still the native language that will provide the generally social and referential clues, indispensable to phonetic learning[22]; during the first stage of the bilingual mode, there will not be two linguistic systems in the individual's mind, but only one – common and undifferentiated.

Non-native bilingualism. All of the above highlight one of the limitations of bilingualism, namely that native language boundaries cannot be ignored, because with each individual the basis of vocal-articulated language user is one single core of neural matter, one single configuration of speech organs, which are activated and develop based on one single language. That is why, on the one hand, even if two languages are learned simultaneously after birth, they will organise in such a way that one will be dominant and will impose some of the features; on the other hand, even if differentiations occur due to the intensification of exercise, it results from what has been documented so far that a perfect separation of the two languages and a full and equal command of both languages will never be reached[23].

With every act individuals perform, they start from the state they are in, manifesting themselves according to the data with which that state has equipped them. Therefore, the individual who already masters a phonetic system, acquired naturally in and from the milieu they belong to, whenever they are in a situation of learning another phonetic system, they will no longer be able to display manifestations identical to those that have accompanied and influenced the learning of the first system. Their current stage, as users of a language, is not the same as before, as uninitiated in any language. This means the individual's perceptions and productions will not be genuine anymore, but

[21] Zou *et al*. 2012.
[22] Peters & Boggs 1986; Bond *et al*. 1996; Lengeris & Hazan 2010.
[23] Major 2001.

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induced and oriented by the present state, which is the consequence of exercising the original phonetic system. Everything that individual will acquire will inevitably be prompted by the exercise of the primary native phonetic system, which can determine the attempts to acquire and use any other subsequent phonetic system[24]. In terms of details, the linguistic behaviour of this individual, when using the non-native language, will be determined by initially acquired linguistic behaviours, specific to speakers in their environment, as practised for the primary referential system. Whether it is the similarities between the two systems or the differences between them, the actions and judgements of this speaker will have a reference point (not as in the case of activities accompanying first language learning), which is the native language. In fact, the speaker can't help but observe the degrees of compatibility and differentiation between the two systems, while speech and neural organs will function in such a way as to adjust them to L2 requirements.

> „*Two beings belonging to the species H. sapiens sapiens, born and living on Earth, one at an altitude of 8 m, for example, and the other at 4,100 m, display both common features and hard-to-overcome or even insurmountable differences. Taking as a reference only the atomic air density, the respiratory and circulatory systems and the general functioning of cells (particularly the ways in which they manage the oxygen), the two beings will present consistent differences given by the life in that environment of a long line of generations adapted to that setting. Although they belong to the same species, the two individuals not only present anatomo-physiological differences (due to the development and improvement in phylogeny and ontogeny of certain specific anatomo-physiological modes – generated by the relationship with their particular environments – of procuring and managing the oxygen needed for cell functioning), but they also present biological adaptations and behaviours related to oxygen need and consumption (differentiated capacities at pulmonary level and the level of haemoglobin, for example, which concur to generate efficient ways of oxygen supply and consumption by cells etc.).*
> *If the two were to switch the environments, their adaptative mechanisms – which work to preserve life – would strongly activate and, even if they did*

[24] Johansson 1973; Miyawaki *et al*. 1975; Fujimura *et al*. 1978; Major 1986; Lively *et al*. 1993; Guion 2003; Levy 2009; de Leeuw *et al*. 2010; Newman & Wu 2011; Sirsa *et al*. 2013; Souza *et al*. 2013; Core & Scarpelli 2015; Cassillas & Simonet 2018.

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survive eventually, it would only be possible after undergoing a difficult stage of adaptation. It is most likely that in the end their cell performance degrees should stabilise below the previous levels. Beyond what might be apparently perceived, they will still remain encumbered with their native anatomo-physiological traits (given by the activation of their gene pool, constituted by means of successive selections within a long line of generations belonging to that environment) and, throughout their life, they will not be able to function as they would in their native environments or as the natives from the environments to which they have transplanted".

On the one hand, a native speaker of a language – of any language –, who learns a foreign language – any foreign language – will display certain general sound perception and production tendencies, derived from and given by the concrete ways in which his/her audio-articulatory structure (AAS) has got activated and stabilised, in the process of acquisition and command of the vocal-articulated language (that has occurred via his/her native language). The mere presence of tendencies oriented by the exercise of that language is common to all native speakers of any language who acquire any foreign language. This is precisely because that particular tendency is nothing more than the effect of the AAS reaction to the attempt to produce foreign and unfamiliar co-articulations. The actual tendencies and forms of manifestation of the reaction will nevertheless be significantly different in the case of the native speakers of a language and those of another language. Put differently, the fact that individuals have their environmental language features ingrained in their structure does not deprive them of the ability to acquire another language; but this one is "foreign" precisely because their speech organs, their innervations and neural system have obtained the necessary determinations to use the native language, which is irreversible, limitative and liable to not allow the use of a foreign language at the same parameters as the native speaker of that language.

On the other hand, a native speaker of Romanian, who learns French for instance, will present certain tendencies of articulation of this language, whereas the same speaker learning English, for example, will exhibit tendencies that are significantly different from the previous situation. In other words, the same AAS, having managed various demands, produces results according to the relationship between its state and the demands specific to the foreign system. Moreover, having acquired French, the same individual will

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have a certain behaviour when learning English and a significantly different one should they learn French after English. This means that after an AAS, which has been imprinted and exercised via the native language, has acquired the articulations of a foreign language, these may come to interfere with the treatments that AAS applies to L3. Some of these treatments are the same regardless of the foreign language to which they are applied (here one can best note the limitations of AAS imprinted by the native language). Others are differentiated in terms of how the AAS can manage specific demands (the same thing can be noticed here, but manifesting in subtler ways). In contrast, other treatments no longer derive directly from the position of L1 vis-à-vis L3, but are influenced by L2, for the range the AAS may respond to such a stimulus is limited.

"Native" bilingualism. In order to scientifically compare it with monolingualism, simultaneous bilingualism should be defined per se. However, to truly exist, it needs very special conditions, almost impossible to find in the real world (the parents – and even a large part of their ancestry – should be native, i.e. one – a native speaker of a language, the other – of another language, while the environment should be segregated accordingly). Reality offers less than that, usually a monolingual parent (or not), a native of the language of the milieu, and a parent (usually bilingual), a native of another environment. Sometimes, the latter is also a native of the same environment, with a good command of some L2.

Whatever the case may be, though it seems otherwise, simultaneous bilingualism[25] differs only apparently, not essentially, from that of the individual learning L2 after acquiring L1. The simultaneous bilingual will face no issues of articulation and conceptualisation specific to the sequential one, will have performance levels that are incomparably superior to the latter and will handle both languages with great ease. From a lay perspective, their bilingualism will be total. However, a more thorough research will reveal sufficient clues showing that not even can he/she master two phonetic and conceptual systems (grammatical, lexical-semantic and stylistic) fully equally and at the same level as the one they would have if they had acquired only one of them – any of them – from birth! Inevitably, they will position

[25] Ellis 1985; Baker & Prys Jones 1998; Petitto *et al*. 2001; Meisel 2004; Cárdenas-Hagan *et al*. 2007; Byers-Heinlein & Werker 2009.

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themselves in a hierarchy and there will be (small or insular, relatively sporadic, but significant and real) differences between them.

Without knowing the causes yet, those who acquire two languages simultaneously (simultaneous bilinguals whose structure apparently assigns the same resources, attention, exercise in the same amount and of the same quality to each language) – and should logically be able to master both languages at the same level as the monolingual's command of their native language –, fail to exhibit total (full and permanent) separations between the two systems so that they could be perceived by the corresponding monolinguals as individuals with whom they might completely identify – linguistically speaking.

As we have seen, unlike monolinguals, simultaneous bilinguals who speak both languages correctly and effortlessly, using rapid successive sequences, activate several brain areas. Just like the hearing-impaired – whose bimodal bilingualism influences the brain organisation in terms of the recognition of facial expressions[26] –, those without disabilities may develop some compensations due to intense demands, as the body assigns functional structures, apt at meeting such demands, temporarily and in exaptative manners. Likewise, with bilinguals, because the phonetic-phonological, grammatical and semantic processing of utterances requires much more neural activity than in the case of monolinguals, the solution is to extend the function to similar structures, though normally it does not deal with such a thing with either monolinguals or – in non-demand situations – bilinguals.

Indeed, the early shaping of the brain and of the cognitive processes required by linguistic activity for bilingualism – under the (ideal) circumstances of "equality" of the two languages – might generate an interaction that would cause a certain competitive tension manifested through a mutual influence of the two languages that, in the bilingual's brain, are at various degrees of contact. Also, it is possible that, following a constant exercise within a genetic line of bilinguals, those particular brain structures should change the occasional nature of the assignment to a frequent one, which later becomes intrinsic to them – obviously, if natural obstacles are not stronger.

The bilingual exercise can thus lead to a certain structural differentiation of the bilingual brain from the monolingual (not only

[26] Emmorey & McCullough 2009.

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linguistically[27] –, the former having a diffuse neural network as compared to the latter). In their turn, the two languages will occupy different positions one against the other as opposed to bilinguals, who have first acquired native language practice[28], but equal treatment and equal ability that should entail a full equality of the two languages cannot be established, therefore presupposed. This is confirmed by the results of the measurements of the brain activity by means of the MRI, which show that the neural network in charge of the linguistic activity is used by monolinguals with much more efficiency, whereas bilinguals pay the price of their skill with a larger network that implies certain difficulties in processing[29].

It is possible that the restriction in question should be caused by a physical limit, for the brain does not have the ability to truly allow it to store or efficiently use the information needed to update a second language, given that the body lacks the ability to unfold the innervations – of the speech organs – so elaborately that they can fully control two linguistic systems. (Again, we are referring to two systems, mastered to the same great extent as the monolingual masters his.) It is also possible that this limitation should not be a matter of evolution only (given that, in extremely stressful conditions, organisms may develop structures with functions that should meet those needs), but also of development (no matter how high the pressures, organisms have energy limits, i.e. they cannot handle everything, to any extent, in any way and at any time)[30].

All this clearly shows that the limits of the functions are given by those of the organs developing and exercising them, that speech organs and the neural system do not have infinite abilities, therefore speech organs imprinted with the phonetic system of the first language – intensely exercised in the native environment – lose their initial pluripotency and specialise, the price being the various degrees of difficulty in producing the co-articulations specific to another language than the one with which some exapted organs have come to function as speech organs[31]. It is not the languages per se that filter or impose something; it is the exercise of a given language that models

[27] Buchweitz & Prat 2013; Becker *et al*. 2016; Bialystock 2017.
[28] Román *et al*. 2015.
[29] Garbin *et al*. 2010; Palomar-García *et al*. 2015.
[30] Anderson 2010.
[31] Cutler *et al.* 1989; 1989a; 1992; Hammer *et al.* 2007; de Leeuw *et al.* 2010; de Leeuw 2014.

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the organs which (re)produce and practise it[32]. These organs have no ability to hold several linguistic systems (which is useless from an evolutionist viewpoint, hence outside the constructions and investments of evolution and, implicitly, of selection). Furthermore, that particular exercise cannot overcome the functional structures which, once imprinted, cannot regain their genuine state, so they cannot resume the exercise in an unimprinted state.

Native language – foreign environment. An adult who changes the environment, leaving that of the native language, and settles down in one in which a language foreign to him is spoken will have virtually insurmountable difficulties throughout their life. They will never get to master the foreign language above a certain level – which is only in part due to their history and personal skills, for it fundamentally has to do with the initial imprinting resulted from learning and intensely using their native language.

> „*In terms of one's history and personal skills, it is significant that, if one has acquired their native language at a precarious level – because of the poorly developed and non-stimulating milieu one has lived in –, it is possible that when entering the environment of a foreign language, one should transfer sounds and phonemes not only from the native language, but also from the other one, thus producing various mixtures. Although this case is real, it is not common and lies at the periphery of the concept of 'bilingualism'. It has been mentioned because the information provided relates to a general fact, easier to observe here. Namely, individuals who do not have a fully developed AAS – by exercise in all directions and going beyond a certain level of depth –, faced with situations which exert pressures at certain intensities on them, will exhibit the tendency to complete the AAS by building a hybrid one, thus filling in the vacant «valences». This is valid for any individual, in the various moments of their development.*
>
> *As shown, the abilities of functional structures (from brain to the humblest motor one) are limited. Therefore, just as the brain cannot exceed a certain capacity of storage of the active information, so the (speech) organs cannot have an infinity of innervations. (The price for new acquisitions is the removal, as a result of non-use, which brings along «forgetfulness» or reorganisation – both relatively limited in the context of the usual language practice.) Under these circumstances, when functional structures have not been activated at the*

[32] Racoviță 1929.

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level of their potential capacities, the process in question becomes possible due to the intense and extensive use of the former. Thus, in specific conditions which prompt such course, the activity of organs may tend to an individual maximum, as processes aim to somehow fill in the empty valences. This act is in complete accordance with the way in which biological organisms manage their resources in order to meet the new demands: the young and less trained ones activate their components and adapt them, while the mature ones tend to adaptation, but rather use exaptation".

Growing up both in the family environment and in the new one, the children of the abovementioned adult will face rather insurmountable obstacles. The co-presence of the two languages – more precisely, the uninterrupted presence of the native language (the learning of which is by nature the solidest and thus continues to strengthen) – will encumber quite a lot and even seriously obstruct the natural acquirement of the foreign language features and their imprinting. This will last despite the constantly directed action of the environment; the dilution of the family milieu action will not go beyond a certain level, again only partially given by the individual's history and abilities to comply with the demands of the linguistic environment and limit the exercise of the native language – a basis endowed with considerable imprinting force, strengthened by home practice and milieu.

„*There are differences among the children of such families, transplanted when they were 15, or 7, less than one year old or even in a foetus state, but they are quantitative not qualitative, so long as the family continues to use the native language and not that of the environment. Furthermore, even if – due to somewhat unnatural efforts – the language of the environment is used, given that the parents can master it only at a level which is much below that of the environment, those children will familiarise themselves with many of the features of the parental idiolect, alongside those they acquire from direct contact with the environment. In any conceivable situation, with any type of favouring factors – without forcing the frameworks of reality –, the results would hardly approach the highest level of sequential bilinguals*".

Following the intense transgenerational exercise of the foreign language – which may be predominantly or (almost) exclusively used –, the dominant (native) language may lose its accuracy and gradually decline.

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Having undergone a stage of bilingualism, along several generations (again, the length of the line depends on various environment and contextual factors, from the community structure and cohesion, the intensity of pressures and exercise to the fastness of abandoning previous structural and innervational configurations), the descendants of the founding monolingual may reach the state of monolinguals, but of the former L2, which can perfectly replace the former native language. In a different scenario, such an individual may, at a certain moment, end up living in isolation from both communities (the original and the adoptive), of course, using the only language he/she knows (the adopted one).

The following situation is interesting in understanding the conservative force of genetics. In both cases, considering that, after a few generations, life events bring the descendants – who have continued to speak their ancestor's adopted language, with no one in that genetic line having any contact with the native language – to the former country and in a situation of learning and using the first language, their speech organs and neural systems will exhibit evident abilities to adapt to the requirements of the original linguistic system. Due to the genetic factor[33] and without involving other selective pressures of the environment[34], their anatomo-physiological factor will allow them to learn the former language with inevitable pains but without facing such difficult and complex issues as their ancestors did when they became the monolingual speakers of the foreign language.

In other words, upon returning to the native setting, it becomes obvious that native language degradation is temporary and easily reversible[35] (certainly, in relation to the length and intensity of L2 practice). Things happen in this way because, although the constant and preponderant exercise of the foreign language leaves obvious traces, they are much easier to erase than those of the native language, which are present in the foreign language. The entire process shows that its fundamental nature is biological and interwoven with the natural biosocial developments that occur throughout one's life[36].

[33] Ivănescu 1980; Jablonka & Lamb 2005; Maher 2008; Dediu & Ladd 2007; Dediu 2015; Dor 2015; Dediu *et al*. 2017; Dediu & Moisik 2019.
[34] Dediu 2015.
[35] Köpke & Genevska-Hanke 2018.
[36] de Leeuw 2018.

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„*It results from the above that language development and degradation are dynamic, being related to the environment pressures and foreign language exercise*[37]*. As they depend on the immediate context in which the language is used, dominance and degradation involve similar mechanisms and are influenced by the same external factors*".

Non-native monolingual. Finally, someone who was taken from birth (or before) to another environment and kept exclusively in that setting, will be faced with difficulties which can be surmounted only if their audio-articulation structures are the inherited result of some changes already underway – in that direction (parents who are not first-generation in that environment and are reasonably adapted or a parent who belongs to that environment)[38].

„*If we consider the two previously mentioned individuals – who live at their own altitudes, though differing in terms of the referential system taken into account – in terms of the fact that they were born on Earth (either in Dublin or in El Paso), what comes to matter is that they are equipped with functional structures whose actual form of material existence is the naturally generated product of the entire set of particularities on Earth. This means that their body is consistent with the conditions of their environment – which, in fact, have generated and imprinted that organism. When they land on the Moon, both will be face with circulatory, respiratory, muscular, bone etc. difficulties, owing to the mere difference of gravity. (Even in terms of this standard, we should keep in mind that, for the abovementioned reasons, the difficulties will not have the degree of identity which might have been noted if both had been the product of the same environment.)*
Further on, if they manage to survive and reproduce over several generations, after a generation line the length of which depends on many adaptive factors, there will be descendants whose organisms may "forget" – first at epigenetic level, due to the non-use of organs in the previous manner – the terrestrial conditions and acquire structural-functional skills in accordance with the Moon demands. If, after only a few generations, their descendants return to Earth, they will adapt to the new setting less slowly than their ancestors did

[37] de Leeuw *et al*. 2013.
[38] Mayberry & Lock, 2003; de Leeuw, 2014.

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to the Moon environment, practically exploiting what has still been preserved (genetically, epigenetically and even structurally-functionally). Naturally, though the new organism will return to the ancestral environment, it will not simply return to the former states, but will use the elements kept and compatible to it and will tend to componentially and completely adjust, by adapting those elements that can be used in the original environment for other needs, activating the evolutional potential entailing the exaptation of some components and, in extremis, the development of new ones.

In other words, an organism (viewed not at the level of an individual's existence, but at that of a generational line) is initially the result of the expression of its genes. Functioning and complying with the (internal and external) environment requirements, it establishes some initially expressed features – whose action best or efficiently responds to the environment demands – and activates other inactive or latent ones – in the same direction of compatibility with the milieu demands. In this new state, it is not what it was potentially, but what has become by act – i.e. the sum of the initially given and the acquired resulted from its activation. Thus, the organism defines itself and acquires identity. Continuing its existence on the same line and in the same environment, it establishes its initially expressed features and those brought out of latency. However, the environment cannot remain unchanged in the long run (a factor of change is the existence itself and, implicitly, the action of organism on it), so preserving a "line" becomes incompatible with the actual long-lasting existence. Therefore, the organism ends up having to adapt and exapt features, take some out of latency, interactionally create others (by combining existing features among themselves and in relation to the milieu demands) and even develop new ones. In this new stage, it is partly what previously was and partly what has become by undergoing the changes resulted from its adaptation actions. If the new adaptations are efficient and commonly used, such use may establish them, in which case they may be added to the structure of the organism that thus continues its becoming. Finally, at the end of a long series of such adaptations and acquisitions, some of which become perennial, it is possible that, after a line of generations, the resulting organism should be quite different from what it initially was.

All this shows that organisms tend to preserve the data that ensure their durability, use their adaptive-evolutive skills to survive in oscillating, changing or unpalatable conditions, not easily losing their essential

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attributes, modifying, never returning to where they have started from, never completely abandoning their essences".

In a dynamic world, one may believe, therefore, that to presume an individual was taken from his/her genetic community from birth and transferred to another linguistic community could not be a false hypothesis, but a real, though exceptional, fact. Since such an experiment has not been documented, those who might speculate claiming that, under the cultural (or any kind of) pressure of the community to which they were transplanted, the individual may get to speak that language like an authentic native, should accept the equally justified counter-speculation that the difficulty in learning this language is greater than would be if the individual had stayed at home and learned the native language.

Considering such a situation, two things are to be kept in mind. The first is that, already from the womb, the foetus is able to perceive sounds and the results of investigations so far clearly show that this kind of maternal imprinting has linguistic consequences which cannot be neglected[39].

The second, and even more important one, is that, even if speech organs are shaped following their activation – which occurs via a natural language of the environment –, things are not identical in all cases, for the factor prevailing over the behavioural-functional one is of genetic (then epigenetic) nature, being related to the type of community. There are numerous spatio-temporal forms of community. All derive from an original one and the derivates create a type under which they subsume. The actual activity of the genetic and epigenetic factors, of the resulting organic structures, their functioning and behaviours occur in certain – fluctuant and mutable – environment conditions (intrinsic: physical, such as climate factors; extrinsic: biological, such as other organisms; and relational: the effects of interactions of these factors, as well as those of these factors and the results of their actions) and with limited energy resources. In these complex circumstances, everything exists in the tension between the tendency towards identitary stability and the necessity of adaptive variability. In relatively closed communities – diachronically lined in continuous generations –, the anatomo-physiological structures have favourable conditions of development in tight relationships with the types of preferred and established functions and

[39] Gervain 2015; de Boysson-Bardies 2007.

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uses. Although it has the same tendency, the range of functions and uses in open communities is wider, which entails a greater typological variety of the anatomo-physiological structures – a pluripotency whose pendant is the low degree of specialisation. Therefore, the extent and depth of the cell, organism and population adaptation processes – at structural and functional level – are differentiated in the two types of community.

> „*On the one hand, the genes facilitating the development of useful traits – as a response to the environment – are favoured, on the other hand, after the action of the genetic factor (with a very high degree of stability which ensures the continuity of the organism constants), the cell, organism or population are activated as such by use. But the functioning of these entities in a certain environment and in various contexts makes this usage interactional and liable to shape them, directing them as efficient products of non-genetic (particularly epigenetic) factors. At the same time, however, although the environment factors initially controlled a certain feature, this will tend to develop under genetic control and independently of the environment. Thus, as evolution progresses, the mechanism allows certain aspects of the phenotype – initially indirectly specified via the adaptive processes – to be specified directly, which means that adaptive processes can be efficient in determining or guiding evolution. In other words, the epigenetic features, action results, behaviours etc. which last long in a population can be selected in the genome and become transmissible, thus freeing up the information storage space, useful for the acquisition of other elements necessary to survive in the given environment*[40]*. The evolution engines are hence not restricted to genes, but woven into the evolution canvas, i.e. beings emerge and evolve in order to adapt to pre-existent environments; but, due to fluctuations in the environment, in the relatively casual intervals of their own potential and – to a greater extent – due to the effect of the adaptation process, they get to somewhat determine the environments of cohabitation and to co-evolve along with them*"[41].

[40] Hinton & Nowlan 1987; Johnston & Gottlieb 1990; Jablonka & Lamb 2005; Lester *et al*. 2011.
[41] Callebaut & Rasskin-Gutman 2005.

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That is how each community comes to have their own features, tendencies, habits, ways of transmitting-learning knowledge and behaviours; this entire genetic, epigenetic and behavioural-cultural ensemble acquires, following its stabilisation, the ability to induce determinations on the process and its results[42], for intense usage may generally create structures which can become conventionalised – emergent, not *a priori* – patterns[43].

In this context, regardless of where an external individual might come from, one's genetic constitution – i.e. the most stable component – distinguishes one from the members of the new community one enters. Until a potential adaptation – following the settlement there, then hybridisation and naturalisation –, the very next generations will still develop structures determined by the usage types in the community of origin. That is why, for a while, the acquisition of the new language cannot occur with natives from that particular community.

Dynamics of the living. Structures developed under the influence of nucleic acids tend both to stability and internal perpetuity, and to balance in relation to the environment. Consequently, they develop, exercise and specialise both homeostatic and adaptive-evolutive elements and skills needed to survive in real-world conditions. A generational line comprises not only each generation per se with its connections, but also the inherent process by which adaptive and exaptive changes and adjustments occur – both within a generation and from one generation to another[44]. Even under unfavourable circumstances, however, organisms exist and function so as not to abandon the stable and long-verified results in exchange for states which have not proved, with much force and over a long time span, the ability to remove the old state, in conjunction with that of establishing a new long-term state to ensure durability.

In order to survive and reproduce (reproduction being the ultimate form of survival), the functional structures known as *living organisms* have

[42] Dediu 2008; Smith 2011.

[43] Laver 1978; Croft 2000; Givón 2002; Gick *et al*. 2004; Smaldino *et al*. 2018.

[44] The former refer to the situation in which organisms respond to demands evolving in the internal or external environment, creating adapted survival means, in order to improve structures and functions. In the latter case, organisms respond to new demands by developing new functions, complied with by adding them to an already existing structure – operating adaptive restructurings – thus partially reorienting the role of that constitutive element (Gould & Vrba 1998).

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prepared for searching and finding balances in the environment and, at the same time, for finding and applying appropriate solutions to this inner tendency. Whether the actual and immediate problems they face are imperative or not, organisms act so as to valorise the existent (energetic and anatomo-physiological) resources and functionally modulate these – actions with various degrees of amplitude. On a small scale, biological organisms seem to tinker about, but on a large scale they seem to act on a long-term basis, sometimes quite coherently. Both conclusions are probably apparent, induced by the teleological illusion. Rather, one may believe that the momentary solutions of organisms arise from their phylogenetically and ontogenetically acquired abilities and experiences, i.e. are the results of a selective accumulation process, applied to issues which have developed in time, but which emerged in a moment of crisis and were then solved at an appropriate time. Sometimes, the issues are mere outbursts of flawed systems or systems completely subject to factors disproportionately developed in relation to them. However, in most cases, problems and solutions appear almost simultaneously (or prompt one another's emergence), prepare mutually and co-evolve, so that when they openly work, a struggle is triggered, from which evolution gains no matter the result. However one may view the system (although it is hard to define in terms devoid of teleological nuances, as its essence is of causal nature), it functions by itself and via the relationships the organism enters.

The speed of this process is, nevertheless, a function of the demand to maintain identity, its disruptions being, for any biological organism, traumatising until annihilation. But identity does not consist in immutability, but in the long preservation of some elements (it is not features that are kept or transmitted, but the elements which generate and express them) which are able to confer a degree of perpetuity. The evolution of generations is accompanied by (and may even presuppose) the evolution of identity; however, this process – slow, if viewed anthropocentrically – is a possibility that can be achieved at the end of a series of successive and coordinated evolutions. It is accompanied by the gradual loss of elements which generate the initial features (after providing the continuity of identity), in conjunction with the gradual transformation of the once new elements into identitary elements. And these are a viable and efficient combination of the results of becoming of former elements and the acquired and permanentised elements

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– which also descended from the former or, at least, emerged in compatibility with them.

Similarly, once audio-articulation organs are activated, oriented and imprinted (by acquiring the vocal-articulate language via the native tongue), the entire ensemble tends to preserve the configurational, innervation and functional balances, the small oscillations caused by operation over time being compensated or followed – without losing the identity of the functional structure. At the same time, any other demands resulting from the need to use another linguistic system are solved by exaptation, i.e. those demands are complied with by using tools (vocal apparatus and neural system) established as such by activating and exercising the first system – that which imprinted the tools. But the limits to which the organism can make this effort in natural and normal conditions cannot be equal to those of the first system, because the entire effort would be inefficient. For reasons whose fundamental nature is energetic, any process of specialisation is accompanied by two major types of processes. On the one hand, the development of skills and abilities, which do not depend on the main process but are necessary for its proper functioning, is stimulated. On the other hand, the processes seriously obstructing, hindering or uselessly doubling the main process are inhibited (often in the sense of diminution).

Therefore, in natural and normal conditions, at the level of one generation, however large the consistent demands and adaptations may be, a conversion in another direction is impossible. This would imply either bringing the AAS and the neural system to the *tabula rasa* state and rewriting them completely, or the possibility that an AAS and a neural system imprinted via a language should produce – at equal performance level and in full separation and autonomy – two languages which are in ideal coexistence.

> „*That is why, it has been noted in users with a good command of two or more languages that, when reminiscing, in their old age, about their childhood using one of the non-native but well mastered languages, they produce articulations specific to the native language or determined by it; at some point this occurrence sets in and becomes more and more common, although, until then, their level of performance had been high. Moreover, the same occurrence is noted in individuals who have acquired their language via a dialectal or diastratic variant. After a life during which they have changed their skills and used the*

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literary norm articulations at a constant level, when getting old, they may produce articulations specific to the native dialect or diastratum".

The difference between the situation and the manifest possibilities of the monolingual and of the bilingual reflects the absence/presence of a practice of a certain intensity and orientation. The similarities between them reflect, nevertheless, the stability of the primordial basis and the innate incapacity of the biological organism to overcome its material limits. Although the intense practice of a foreign language may affect the concrete achievements of the native language, particularly in special circumstances (the abandonment of the native language and long practice of the other one, in its natural environment), a thorough analysis of such situations shows that, while skills may be relatively easily acquired at various qualitative levels, they are only an adaptation mechanism which facilitates the fulfilment of immediate communication needs.

Skills are important because: a) they allow the incipient activation of a range of articulatory possibilities not valorised by the native language and possibly necessary to produce the foreign language; b) due to frequent and intense exercise, they are able to modulate and change depending on the articulatory demands of the foreign language. However, the skills that produce the sonorous flows of a foreign language develop by means of sound-producing organs and of other ones controlling the entire process at nervous level. These organs exhibit a range of possibilities that can partly coincide with that of the foreign language and can partly adapt to requirements foreign to it. Given that skills relatively plastically express the state, dynamics and possibilities of somewhat configured and innervated biological structures, they lack the ability to produce the adaptations that would entail the updating of the foreign language at the same qualitative level as the native language update. Only the full abandonment of the latter and the exclusive exercise of the former, throughout several generations, may bring about changes in the audio-articulatory and neural ensembles, capable of transforming them so that the language that had been foreign to ancestors of that particular speaker should become an intrinsic tool, whereas the sonorous flows thus produced should be identical to those of the speaker to whom that language had always been native.

It is, therefore, possible that, quite a few generations after the replacement of the native language with an adopted one, the latter should

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function in the same way and at the same level that its natives have always used. In this respect, bilingualism is rather a necessary stage on the long road leading to establishing the former foreign language as a native language, i.e. a journey which leads from monolingualism regarding a language to monolingualism regarding another one, not to "double monolingualism". It is indispensable for the foreign language to make its own way to reach the status of native language; however, its persistence prevents the manifestation of monolingualism, given that bilingualism lacks the ability to generate speakers whose linguistic competence in both languages should be similar to that of the monolingual, particularly in the absence of an imperative evolutive demand in this respect.

Conclusions. Considering the above, it is understood that a concept like 'bilingualism' serves to designate a reality which acknowledges degrees, but which does not exist in full state, as the term would prompt one to believe. Bilingualism is both a concrete state and an abstraction, something which actually exists only partly, not absolutely. As an ability to use two languages (regardless of whether it is simultaneous or sequential bilingualism) at the highest level of performance of the monolingual, completely separated in the brain and at the level of speech organs, fully equal and non-hierarchical (i.e. on the one hand, both are mastered to the same extent, on the other hand, the performances in perceiving and producing the two languages acknowledge no degrees between a reasonable minimum and maximum limit reached by the monolingual), bilingualism is a biological impossibility. Otherwise, the term may refer to all the other degrees of command of an L2, with the possibility of following the distinguishing features of each descriptively, typologically etc.

As with polyglossia, bilingualism may be accurately defined in part in order to faithfully reflect the reality, provided that the degree of command of the non-native language is quantified. Anyway, the maximum point of accuracy and reliability of definitions is precisely the area which is external to them, i.e. the referential point provided by the native language, and requires one to point out the degree of command of the foreign language, as compared to the native language. Native language is in itself the fundamental landmark not due to the consequence that its dominance is overwhelming and unbeatable, but fundamentally because it is the tool implicitly achieved through the process of acquiring the biosocial behaviour of vocal-articulated speech.

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Native language naturally asserts itself before any other language because it is rooted in the strength of practice constantly directed throughout generations; it is aggregated and modelled by maternal (uterine) imprinting; it is initialised, adjusted and increased during the initial learning (the exercise of perceptions, orofacial movements, vocalisations and productions during the first 12-24 months of life); it develops, strengthens, stabilises and evolves by configuring and innervating structures in order to meet the concrete functional demands of the language used within the native community and it is exercised constantly within the community one belongs to. At the same time, this strength is supported by the inability of speech organs and neural circuits to fully differentially and accurately master two linguistic systems. Finally, it is not about one language or another, it is about the ability of a structural-functional system to generate and sustain a biosocial epiphenomenon, and such an acutely specialised activity that only a single entity, a single product can really fully exist at this level.

In this respect, monolingualism derives directly from the primary biological state; therefore, however intense and efficient the attempt to imitate the place and manner of articulating the foreign language sounds might be (particularly the effort to reproduce exactly, in current and normal speech, the co-articulations and sonorous flows of that language), it will never rise to the level of the monolingual. To get there, it would be imperative to somehow abandon the AAS of the native language and replace it with that of the foreign language. But, in one generation only, such an effort is an exemplary impossibility. Even over many generations, the effort of moving from one language to another implies, at the same time, a mental transition, resulting in the modification of neuromuscular images (which form a coherent and integral system, specific to each linguistic community). Whatever mutation or recombination may be produced here, the result would be comparable to that of chromosomal mutations (from insertions and deletions to translocations), i.e. the result would neither be native, nor foreign, but rather a tertiary hybrid. But a full replacement of the former configurations with new ones is absolutely required even at this level.

Nobody speaks two languages *perfectly* because that would only be possible if an AAS were fully replaced, if needed, with another one and vice versa – which is impossible[45]. No matter how wide the range of situations

[45] Gaya 1988.

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(from the eccentric fringes and numerous concrete cases which require thorough research before being subordinated to a term, to the prominent cluster that can fall under a vast but uniform category) may be, they show that: a) directed usage of organs leads to the loss of their innate plasticity and to the consolidation of the matrix thus acquired; b) from an evolutive viewpoint, such energy consumption is a waste which the organism does not prove to be so structured as to afford it.

In fact, bilinguals, of whatever rank, are torn by a perpetual struggle with their own audio-articulatory structure, which – regardless of what the untrained ear seems to grasp – infallibly defeats them, as it is a constitutive and identitary part of them. Native monolinguals have no such states, for they are one with their audio-articulatory structure, which constitutes them, while they express it.

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