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**LANGUAGE TEACHING
RESEARCH BASED ON THE
THEORY OF MODELS**

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1. Reasons for this Document of LTR

The first volume of the collection, *Documents of Language Teaching Research*, was devoted to the definition of an epistemological framework pertaining to this sphere of studies (Balboni 2006a); the second was devoted to proposing a reference model for intercultural communicative competence, a vital component of language education (Balboni 2006b); the third was devoted to operative models (Balboni 2007): in all three documents the concept of “model” played a central role.

These *Documents*, as the reader is aware, are not for sale but are sent to a thousand or so scholars of LTR throughout the world, some of whom, according to a tradition deeply-rooted in many cultures, responded to our gesture in the most noblest manner by contributing their thoughts and comments.

1.1 Readers’ contributions regarding the previous *Documents*

Our colleagues’ contributions were primarily focused on the concept of “model,” and specifically on the fact that:

- a. “*model*” is often an ambiguous concept (notwithstanding our efforts to give it a definition in the second and third *Documents*): this seems to us a well-founded objection and, therefore, a chapter of this volume is devoted to a definition of “model”, in accordance with a theory of models that originated in the logical-semiotic sphere and was subsequently employed in mathematics, becoming one of its epistemological foundations;
- b. a science that does not produce reference models is not a “science” (i.e., organised knowledge) but is at best merely an operational methodology, a sphere of study wherein models are applied that are elaborated elsewhere and often for other purposes. Moreover, LTR still has difficulties in finding shared reference models, therefore it was suggested that we continue to persevere in our research: hence the direction of this *Document*, at least for certain models that can be shared beyond the single peculiarities of different language teaching schools;

- c. *some models proposed by us did not correspond to the prime characteristic of a model in the proper sense of the word: to produce propositions that are universally true (declarations or procedures, according to cognitive theory).*

It was also brought to our attention that some models presented certain shadowy regions to which may be applied René Thom's theory of catastrophes (a theory about the falsification of models). A model must resist any attempt at falsification, both in empirical terms (even if the empirical falsification is the first of the seven types of "catastrophe"), and overall in logical terms: there are models, such as Hopkins' physics and the theory of antimatter, that exclude by definition any possible empirical validation or falsification (the appearance of antimatter in our universe would provoke its annihilation). Some of the models we proposed in the past as "models" suffered from logical or empirical catastrophes, (as duly noted in the reflections on this theme by several readers...)

In the spirit of these responses, I decided to re-study the matter, and this in turn involved a series of re-definitions of many of the things that have informed my teaching and writing in more than thirty years of work in this area.

1.2 The role of "models" in our epistemological framework

The fundamental assumption in the first *Document* was that our sphere of studies (at this stage we will not as yet label it a "sphere of science") could be viewed in two ways:

- a. as an *application of diverse sciences to the linguistic education sector*, namely, teaching orientated towards the improvement of the mother tongue and towards the acquisition of a second, foreign, ethnic, or classical language: in French, the term *linguistique appliquée* is often used; in English, *applied linguistics*; in Italian, *linguistica educativa* (as proposed by Tullio de Mauro); and similar expressions are used in other languages as well. In point of fact, however, these definitions are often imprecise: for

instance, most of the LTR in English speaking countries is actually *applied psycho-linguistics* more than applied linguistics, and in many cases it is a *didactic methodology applied to languages*, and could equally be applied to mathematics or history;

- b. as an *autonomous science*; to be such, it must provide:
- its own *specific sphere of research*: linguistic education, which is a branch of education that differs from all others because the purpose (language) and the teaching instrument (language) coincide;
 - its own *specific finality*: to solve a problem, that is, acquiring or improving communicative competence by approaching as close as possible to the maximum level of competence; it is therefore a “practical” science orientated to solving a problem and it differs from “theoretical” sciences whose purpose is knowledge (linguistics aims to know the nature and the functioning of language, psychology aims to know the nature and the functioning of the mind, and so on);
 - its own *specific cognitive methodology*, in common with all “practical” sciences such as medicine, engineering, etc.: starting from the cognitive treasure-trove to be found in theoretical sciences (or in practical sciences when they produce knowledge while solving problems), we take from within them those implications that are useful for our constructions. In an epistemology based on *implication*, as the one above, the participant (in our case, the LTR researcher) operates within the practical science, while in an epistemology based on *application* (see point “a” above) the participant operates within theoretical science and establishes which knowledge can be applied to the solution of the problem in question;
 - the capacity to *produce models* that, on the one hand, are reference points for the scientific community, and on the other hand, generate behaviours from the operative community that, in real contexts, applies such models to solve a problem (i.e., the planner of a language curriculum, the author of didactic materials, the teacher who directs the acquisition and the

learning of a language, the evaluator/examiner who certifies the level of competence, etc.).

This *Document 7*, therefore, intends to reflect on the theory of models, intends to verify the existence of LTR models, intends to correct some definitions in the previous *Documents* (and in many of our other publications), in order to try to produce logical constructions and propositions that can be a reference for those dealing with linguistic education in any particular context.

The models we propose are not unique in their sphere: just as there are various models for mathematics or sub-atomic physics, equally, there can be various models for didactic interaction and communicative competence. Researchers can choose which model to adopt: *the presence of different models that describe a phenomenon or an object is not deleterious or reprehensible at all; rather, it is a healthy condition that attests to the vitality of a science.*

Unfortunately, LTR presents an evident lack of models, and our effort will have a greater sense if the models that we humbly propose to be adopted by the scientific community will also produce a blooming of alternative models, thereby permitting linguistic education to be interpreted from a wide variety of perspectives, and according to different assumptions.

1.3 Synthesis

We further note that, (due also to the contributions from the readers of the previous *Documents*), in the past we used the term “model” in an inappropriate manner: if a “model” is an universally true proposition, then only some of the propositions we proposed in our studies on linguistic education rose to this level.

Besides, precisely because of the inter-disciplinary nature of this science (the *fuzzy boundaries* of which are described in an English publication of the 1990s), it therefore makes it necessary to seek LTR models, around which to build the specific epistemology pertaining to our science, as well as the definition of its borders.

Such borders make linguistic education science different from (and connect it with) the neighbouring sciences, from which it draws know-

ledge and instruments (language and communication sciences, social and cultural sciences, brain and mind sciences, education sciences, and so on).

2. The concept of “model”

If we want to contribute to the constitution of a LTR “science”, we must define models that are:

- a. *reliable* in terms of contents: it seems obvious, but we must not forget that for centuries there were accepted models, the contents of which were defined in an unreliable manner, that were unable to sustain logical analysis or empirical experimentation;
- b. *economical* in terms of structure; models that offer all the substantial elements and avoid any secondary ones, so as not to generate a halo effect: a model readily usable, as discussed in the previous *Documents*, is built with a hypertext logic (similar to the one used on web sites) that can be explored in depth by opening further layers of details;
- c. capable of *generating behaviours*: in the specific sphere of LTR, behaviours such as the planning, the management, and the evaluation of the linguistic education process.

“Model” is a concept used often as a synonym for “theory” (Chomsky’s syntactic *model*) or to indicate an analogy (a set of billiards balls in casual movement can be employed as a *model* for gas); in other cases, the model defines an example to follow (Leonardo’s *Vitruvian man* offers a *model* for the proportions of the human body), or to refuse (the development *model* in the North East of Italy is deleterious to the environment): in all these cases, the intention is to offer a formal structure as a reference point; although this it is an intuitively clear idea, it is certainly far from rigorous.

However, with this in mind, there are more rigorous meanings for “model,” described in the following paragraphs, and we will refer to them in our proposals.

2.1 The models in formal logic

A “theory of models” was proposed in the 1930s by a Polish philosopher,

Tarsky, who dealt with the parameters of sentence veracity and semantic logic in scientific definitions: a model is a true interpretation, therefore unique and perpetually valid, of a formulation (linguistic, logical-formal, algebraic, etc.); in the 1950s, the collaboration with Robert Vaugh led Tarsky to focus his attention on mathematics and pure logic studies, largely abandoning his interest in linguistics. Therefore, this particular theory of models, originally logical-semantic, became an aspect of mathematic research.

The ambiguity of language led these philosophers to privilege non-verbal definitions, including simple equations that still kept a trace of their linguistic origin (for instance, speed V as the ratio between space S and time T : $V = S / T$), and real mathematic models. Also in certain linguistic theories a formula definition was privileged, for instance, in Universal Grammar studies, in Saumian studies, and in the “trees” of generative linguistics. It is worth remembering that the theory of catastrophes proposed by the French philosopher and semiologist René Thom, was inspired precisely by the attack against the stable structures that were hypothesized by linguists: a “catastrophe” is the mutation of a model, the demonstration of its “fragility” because, if the model is modified, it is therefore recognized as a non-model, and also the new model, produced by the evolution of the precedent one, has within itself the “original sin,” of being originated from a false model.

Nevertheless, not all sciences or spheres of study accept formula definitions, verifiable through formal logic or mathematics: LTR, (i.e., the study of linguistic education in the broadest sense of these terms), is one of these and, therefore, is founded traditionally on verbal definitions. In this regard, René Condillac, a follower of the Enlightenment movement, is often quoted, namely, science is “a well made language.” However, this definition leads to a further problem because, as Arcaini (1988) recalls in his study of the epistemology of scientific language, it creates a dangerous relationship between the logical-formal rules of scientific models and the rules of the natural language that express them.

To reduce the ambiguity of the language used for the declarations that define models becomes therefore essential, in order to limit “fragility,” to reduce the risk of “catastrophe.”

2.2 The cognitive “models”

The concept of “model” is used also in the cognitive sciences, although with a meaning less robust than the one given above by Tarsky and Vaugh.

In the same years when these two philosophers “sheltered” themselves in strictly mathematical models, the traditional concept of model entered a crisis also in another sector that intensely sought model order: the neo-behaviouristic psychology of Tolman and Skinner which, regarding the learning process, was based on the model $S \rightarrow R (\rightarrow C/C)$, that expressed the existence of a series of mediating processes between S and R, processes that are mental and, therefore, they cannot be attributed to “behaviours.” This is the “catastrophe” inherent in Skinner’s theory, a fact also noted by Chomsky in 1957 and 1959, along with the translation into English of Vygostkij’s, *Thought and Language*; (this latter work was written in 1936, and is therefore contemporary with Tarsky’s earlier work regarding the philosophy of the Slavic culture, to which he frequently devoted much of his attention).

From Skinner’s catastrophe emerged Chomsky’s linguistic theories along with Neisser’s previous formalisation of formulations, and culminated in 1967 with his *Cognitive Psychology*. In this, Neisser proposed schemes that were valid on a purely logical basis, independent from their identification and empirical measurability: to stay within the spheres of language and learning (the specific objects of LTR), Vygotsky’s “Zone of Proximal Development” and Chomsky’s “Language Acquisition Device” demonstrated the catastrophes inherent in the structuralist approach and they were examples of non-empirical and non-measurable models, as shown in the models theorised by the cognitive sciences.

The model becomes a structure that includes all and only the relevant factors of an idea, an action, an object, a phenomenon: only the “emergent” properties of the object must be represented in a model, so that secondary or unpredictable information does not overload the model and therefore increase the degree of its falsification, increase the possibility of a “catastrophe.” It is precisely in this sense that the “model” proposed by Hymes in his famous essay *Models of Interaction* is used and deemed fundamental for its LTR consequences.

2.3 Our proposal in the first two *Documents*

Based on these theories, in 2006 we engaged in an epistemological reflection about LTR and a model of intercultural communicative competence. This operation was founded on four “declarations” (in the cognitive science sense of that term, see point “c” below):

a. declaration 1: *a “model” is a structure that includes all the possible realizations of the described phenomenon*

In our sphere we sought to determine *models* of competence (linguistic, communicative), of functional analysis of the language, of the relationship between the components of the didactic action in linguistic education, and of curriculum, etc.;

b. declaration 2: *complex models are hierarchical and profoundly layered*
Simple models operate on a single plane and are not profoundly layered: the Pythagorean theorem describes a model of relationship among the dimensions of the three sides of any right-angle triangle, and it does not require further explanatory models.

There also exist complex models, hierarchic structures that include “inferior” levels. For instance, “phonological competence” is a primary model when it describes the phonemes of a language, while it is a secondary model when it is inserted in the “linguistic competence” model, and in turn, the latter model becomes secondary when it is inserted in the “communicative competence” model;

c. declaration 3: *models are forms of declaratory knowledge that, by interacting with other models, produce procedural knowledge.*

In cognitive science there are two fundamental forms of knowledge:

- *declarations*: sentences usually formed by two parts linked by a verb (to be, to have, to be made of..., to be equal to..., to include, etc.), for instance: “all languages in the world have at least three functions: subject, verb, object (SVO),”
- *procedures* based on the relation “if... then...”: for instance, “*if* in every language there are SVO, *then* all languages include the six possible sequences of these three functions: SVO, SOV, OSV, OVS, VSO, VOS;” “*if* the possible sequences are six, *then* every

language can be classified within one of these six sequences: SVO in English, French, etc.; VSO in Hebrew, Arabic, etc.; SOV in Turkish, Hindi, etc.,"

d. declaration 4: *in theoretical sciences, models produce declaratory knowledge (which is self-referential), in operational sciences they produce procedural knowledge (which governs certain behaviours)*

In reality, they are two homologous and parallel declarations that in our discipline can be exemplified in the following way: a theoretical science, such as linguistics, aims to describe the nature and the structure of language, and such knowledge has the final purpose in itself, which is the knowledge of how language functions; while practical science, such as LTR, aims to govern a process (linguistic education) or to solve a problem (teaching Italian to immigrants). Chomsky and Hymes' models describe competences from two different points of view, but for a LTR scholar it is necessary that the competence becomes a behaviour, *performance* ("if the standard sequence in English is SVO, then I have to say *this is an apple* and not *an apple is this*").

(The idea of grammar as a "model" is partially founded on Langacker's theory).

2.4 The role of diagrams in the description of a model

We saw how one of the reasons why Tarsky slowly abandons the verbal model approach in favour of a mathematical one is due to the intrinsic ambiguity of language; this path had already been followed by other philosophers, notably, Wittgenstein.

My personal, academic, and professional history has been revolving for the past sixty years around matters of language (multilingual childhood, as a graduate in languages, as a teacher of language didactics), and therefore, given my *forma mentis*, I cannot conceive as reliable only the logical-mathematical formalisations. I am fully aware of the ambiguity and the risks of language, but I seek to give true models by using language.

In order to accomplish this, I found a useful aid in a collection of essays by Allwein and Barwise with the germane title, *Logical Reasoning with Diagrams*: the core of their argument is that part, perhaps a large part,

of the risks due to language ambiguity can be avoided by integrating language and “diagrams.” This latter term carries various meanings, but for our purposes we may assume it to be sufficiently clear without further discussion.

In the above book there is not a systematic reference to Gardner’s theory of multiple intelligence, but I believe we must keep it clearly in mind: to use diagrams that integrate images (geometric forms, lines, arrows, Cartesian coordinates, etc.) with language, means:

- d. to integrate two codes by using the mechanism that Roland Barthes, in his *Le dit et le vu*, calls *relais*, so that the iconic element acquires meaning only if it recalls the element of language, and vice versa;
- e. to activate three different forms of intelligence, three different ways to see, interpret, and psychologically represent the world: the logical-formal intelligence, the linguistic intelligence, and the spatial intelligence (in Gardner’s sense of these terms).

In our perspective, therefore, the use of diagrams is not only an instrument to clarify and reduce the possibilities of catastrophes due to ambiguity, but is also a way to think differently from the merely linguistic approach. Precisely the capability of diagrams to visually enlighten the relevant components of a model, often leads to an uncritical and careless use of them, which can cause errors (such as the ones we regrettably made) and vulgarisations.

2.4.1 *The risk of error due to diagrams: an example*

Diagrams drawn too rigidly can lead towards an error, as happened in our “tri-polar motivation model”, still largely used, but ill conceived because it was a superficial diagram. In what follows, and in order to continue our reflections on the role of diagrams, we will analyse how this error occurred.

In the Venetian school of LTR the student has always been the focus in the process of linguistic education, and this conferred an essential role to the study of the motivation for acquiring a language. Renzo Titone, the first full professor of LTR at the Venice University, created

one of the most widely used motivational models, the “ego-dynamic model” (the English edition appeared in 1973); Giovanni Freddi, a full professor at the Venice University for a quarter of a century, founded most of his didactic methodology for foreign languages on the assertion, proper to humanistic psychology, that “there is no acquisition without motivation,” (1970, 1979, 1994).

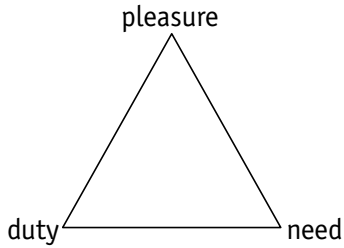
In the early 1980s, I went to study at the UCLA where I attended Krashen’s lectures, who in those years made the connection between the “affective filter” and the “motivational filter”, and John Schumann’s lectures, who at the time was already working on his motivational studies, which further culminated in a model based on the *input appraisal*. In the meantime, in Italy, the concept of “linguistic education” gained greater recognition, and subsequently integrated the acquisition/learning with the teaching of mother, foreign, second, and classical languages.

When I returned I started to turn my mind to a motivational model that was capable of covering the entire sphere of linguistic education, beyond the mother tongue (which is already acquired, so that its improvement is hardly motivated) and beyond the foreign language (the acquisition of English has totally different motivational bases from those of other languages). Among the academic studies of the 1980s, I was particularly interested in those concerning “business communication” not least of all because I was seeking to widen the concept of “communication” that was at the base of the communicative approach.

Unifying what I learned in Venice and in Los Angeles with these new studies, in the early 1990s I developed a *model*:

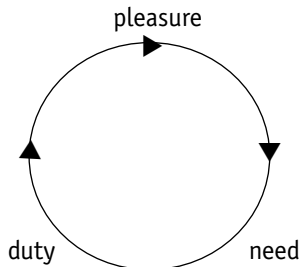
“the motivation for every type of action (acquisition or improvement of a language) can be ascribed to (a) the execution of a duty, (b) the satisfaction of a need, and/or (c) the desire for pleasure.”

These three factors sustained motivation, and the simplest form to link the “three” was a triangle. This basic diagram has been used in many of our and others’ publications since 1994:



The three motivational sources appeared opposite to each other, “pleasure” was at the apex because it was considered the factor that was the most stable over time and the strongest in sustaining the learning effort. However, the triangle has three opposite vertexes, and therefore it produces an idea of exclusion (what is on vertex “A” cannot be on vertex “B”), it emphasizes a definite point, or pinnacle, with the loss of the infinite points that constitute the segment between “A” and “B.” This model includes in its three opposite factors every form of human motivation (beyond the field of language learning/acquisition), and as such has been utilised by many scholars over the last fifteen years. In recent times two fundamental works by John Schumann have given a neurobiological base to the idea that the affective dimension holds the primary position in learning, and this fact radicalised the opposition between the vertex “pleasure” and the two at the base (“duty” and “need”).

In 2006, the third *Document* (Caon, 2006) was devoted to the study of a LTR grounded in pleasure. The young scholar reflected on the “tri-polar” diagram (as we always called it, using this name to emphasise the opposite positions of its three factors) and he noted that in geometry three points define a circle as well as a triangle. He therefore re-proposed the model using a different geometrical figure:



Rather than three opposite vertexes, Caon presents the three factors along a continuum:

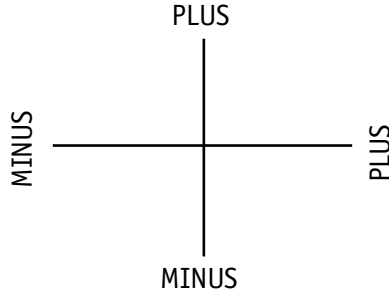
- a. the *duty*, non-motivating and generative of an affective filter, can however evolve into *sense of duty*, which is motivating if the students discover that what they do as a *duty* satisfies linguistic and communicative *needs* that they did not previously perceive, and is motivating if it establishes a *pleasant* relationship with the teacher;
- b. the satisfaction of a *need* produces a form of *pleasure* leading to the discovery of new needs, even if it involves more work in order to satisfy them: the motivation based on need is connected with the one based on pleasure;
- c. the consequence that Caon drew from these facts is the proposal of a LTR intrinsically connected to *pleasure* (for learning, progressing, “playing” with language, building together the meaning of a text, communicating with foreigners of the same age, understanding how grammar “rules” work, linguistic mechanisms, etc.), where also duty and need are interpreted as conditions that can lead to pleasant experiences, hence they become intrinsically motivating.

Our original triangular diagramme, precisely due to its apparent exhaustive nature, led us into an error. If it is true that a model must produce behaviours that shape linguistic didactics, the consequence was the sanitization of “duty” on the motivational plan, and therefore the elimination of any hint of duty from the didactic materials and methodologies: duty produced temporary learning, not stable acquisition. In light of this, the above graphic change was essential, a basic element, because it moved the “tri-polar” concept from a dimension of exclusion back to the one of integration; the concept of a *continuum* overcame the concept of *opposition* inherent in the triangular diagram.

2.4.2 The risk of vulgarisation due to diagrams: an example

In the last decade, diagrams have been extensively used, sometimes

overused, especially in those linguistic education studies that presented elements of the sociology of language (relationships between a thorough knowledge of the code and the social-economical environment), elements of psychology (methodologies diversified in accordance with learning studies, cognitive studies, multiple intelligence, etc.), and in those that appeal to Cartesian coordinates with two intersecting variables:



This type of diagram can be useful for general purposes but, even if it is often called “model,” it certainly does not work for *models* that are universally valid. For instance, the “Bernstein model” is often used where, on one axis the “quality” of mastery in the mother tongue is proposed (“elaborated code” in the + quarter, and “restricted code” in the – quarter), and on the other axis the socio-cultural conditions of the family is proposed. This is a *description* (which vulgarises Bernstein theory), and not a *model*, and the consequence of this, from the scientific point of view, is dramatic because the diagram can be interpreted as if it was *predictive* (characteristic of models) rather than merely *descriptive*.

In the following chapters we will often use diagrams, but we will endeavour to develop them in such a way that they will not govern indirectly our reflection, and in such a way that they can offer the visual dimension, holistically and simultaneously, of a linguistic proposition that is analytical and sequential at the same time.

2.5 Synthesis

In this chapter we have defined the concept of model, which must be *reliable* in terms of its contents, *economical* in terms of its structure, and capable of *producing behaviours*.

We saw how the term “model” is often synonymous with “theory,” how it indicates an analogy, proposes an example to follow or refuse, in other words, how the use of this term is ambiguous.

We then referred to the “theory of models” proposed in the 1930s by Tarsky. This dealt with the parameters of truthfulness in sentences and with the semantic logic in scientific definitions: a model is a true interpretation of a proposition (linguistic, logical-formal, algebraic, etc.), therefore is unique and perpetually valid; it was also noted that an element that invalidates the truth of a model is defined as a “catastrophe” (in Thom’s sense of this term). In the 1950s, Tarsky privileged mathematical models, and from his studies we reintroduced a meaning that was central to cognitive science in the 1960s: a model is a structure that includes all, and only the relevant factors of an idea, an action, an object, a phenomenon, thereby with a view to avoiding the possibility of catastrophes.

We then proposed a series of declarations:

- a. a “model” is a structure that includes all the possible realizations of the described phenomenon;
- b. complex models are hierarchical, profoundly layered;
- c. models are forms of declaratory knowledge which, by interacting with other models, generate procedural knowledge;
- d. in theoretical science, models produce a declaratory knowledge (self-referential), in practical science they generate procedural knowledge which governs behaviours.

Finally, we dealt with the trans-codifications of models, particularly the ones that employ diagrams, which are useful in visualising holistically the model, but which can generate approximations and errors.

3. Some models that we consider valid

In the previous LTR *Documents* we proposed various models (in *Document 4* and *Document 5* the term “model” is even part of the title). From these earlier publications we now recall some models that we consider valid, models that fully describe a phenomenon and that generate consequent behaviours.

(Given the explicative nature of this chapter, it will not conclude with a synthesis)

3.1 An interdisciplinary model of the “science of linguistic education”

LTR is a science that studies linguistic education, which involves the acquisition/learning and the teaching processes in mother, second, foreigner, ethnic and classical languages, and whose purpose is to understand the mechanisms of such processes in order to activate and manage them. LTR is characterised in the following way:

- a. in LTR the language is the *objective* to reach and at the same time the *means* to reach it, this makes it unique among other sciences that deal with education;
- b. it is interdisciplinary, its sources of knowledge derive from various sciences outside of its own sphere, this makes it similar to other “operational” or “practical” sciences.

The first characteristic of LTR introduces a “space of didactic action”, a typical model of education sciences; the second characteristic, its interdisciplinary nature, encourages the search for a *model* that describe at once all the realisations of linguistic education, and therefore a model that can act as a reference point for all the LTR reflections (curricular planning, teaching, teacher training).

The question is:

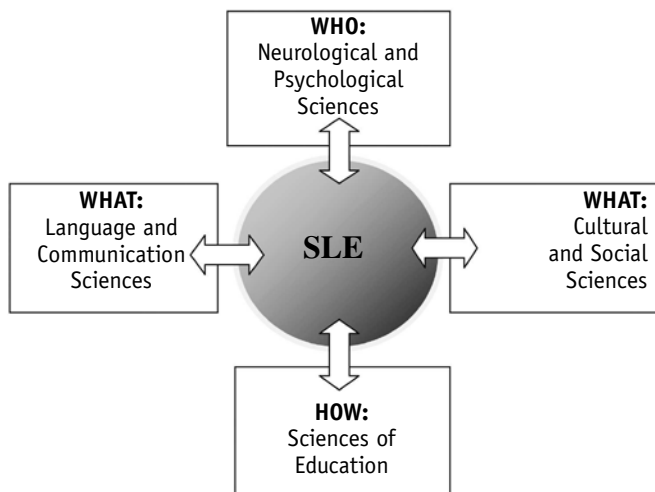
if it is true that LTR is a practical science, and if it is true that practical sciences are interdisciplinary, then which areas of study are involved in

the process of linguistic education described by LTR?

Following Giovanni Freddi (1991), we start by considering the model of the “space of didactic action” previously mentioned. It is an interaction between the “student” (meant as a single person or a class), the “teacher” (meant as a system that includes curricula planners, authors of materials, and teachers), and the “discipline” object of teaching (the language):

- a. regarding “discipline,” the language, an area fundamental to LTR is undoubtedly *language science* (in the broadest sense, including communication studies), which describes the nature and the use of language; but language is strictly connected (not only because of its communicative purposes) to the culture that produces it and that it perpetually contributes in the maintenance of, therefore the second, foreigner, ethnic, and classical language cannot be taught for communicative purposes without also teaching their respective cultures; it also goes without saying that the mother tongue cannot be separated from its cultural dimension: therefore the object “language” is actually “language and culture”, involving also the *cultural and social sciences*;
- b. regarding the “student” who acquires the language: a second disciplinary area necessary for LT research and practice is therefore the *sciences of the mind* (including both the neurological and psychological dimensions), because the mind is both the instrument and simultaneously the site of acquisition, learning, relationship, motivation, and identity (which is intimately connected with language);
- c. regarding the “teacher,” this area involves *education sciences*, including reflections on education, on methodological aspects, on evaluation studies, and on the use of technological aids.

Starting from the classic tri-polar model (where “discipline” evolves into “language” and “culture”) we define the interdisciplinary nature of LTR in the following diagrammatical manner (the graphic positioning of an area does not reflect its importance in the interdisciplinary relationship):



The central circle represents the science of Language Education. The name is omitted on purpose: although important, the label is not essential, on the contrary, it is more in the form of an accessory for the validity of the model. We consider as potentially misleading the terms “applied linguistics” or “educational linguistics”, because they focus only on one of the four elements in the above graphic.

If this is a “true” and not a “fragile” model, what matters is that the LTR researcher takes into account all of the sciences referred to: it is not necessary that *every* study deals with *everything*, but what is necessary is the *awareness* that the reflection in one of the sectors is “LTR” only if it links, at least potentially, to the other sectors. For instance, the research on acquisitional linguistics is a fundamental contribution to LTR, but it remains in the field of linguistics when it describes acquisitional sequences, and only enters the LTR area when it develops a sequential syllabus, it programs a path, it analyses and evaluates errors according to sequences of acquisition, and so on. Equally, most of the reflection on intercultural education, proper to the pedagogical and anthropological spheres, is not LTR until it focuses on the teaching of a second language for migrant students.

3.2 The model of intercultural communicative competence

The cultural component is an essential dimension of the communicative competence. This concept will be described in a model (modified with respect to the ones we proposed in the past) in chap.4, which is dedicated to models that have changed their character as a direct result of the reflections that inspired this *Document*.

In order to communicate in an appropriate way we must know the mindset and life-style of our interlocutor.

Given the quantitative and qualitative complexity and the variability of cultural models (in the anthropological sense as “schemes of reference”) that are present in every culture, it is a velenation pretending to *teach* intercultural communication: rather, we can teach our students to *observe* behaviours, to profoundly know what Hofstede (1991) calls “mental software.”

Observation needs a *model of observation* that determines the critical points, those where pragmatic ineffectiveness is a risk or those where badly interpreted behaviours risk jeopardising communication, independently from its linguistic correctness.

Most of the literature on intercultural communication (for instance the extensive group work by Byram, Béacco, and Zarate at the Graz Center) tends to *describe* intercultural competence without proposing a theoretical *model* for the critical points in intercultural communication. We think, instead, that if the purpose is to make students autonomous, this is precisely a type of model that is necessary as an object of teaching because it furnishes them with an instrument that permits them to comprehend the (inter)-cultural dimension.

In the second *Document* (2006) we tried to propose a model capable of recognising the critical points that can be found in any intercultural communication event.

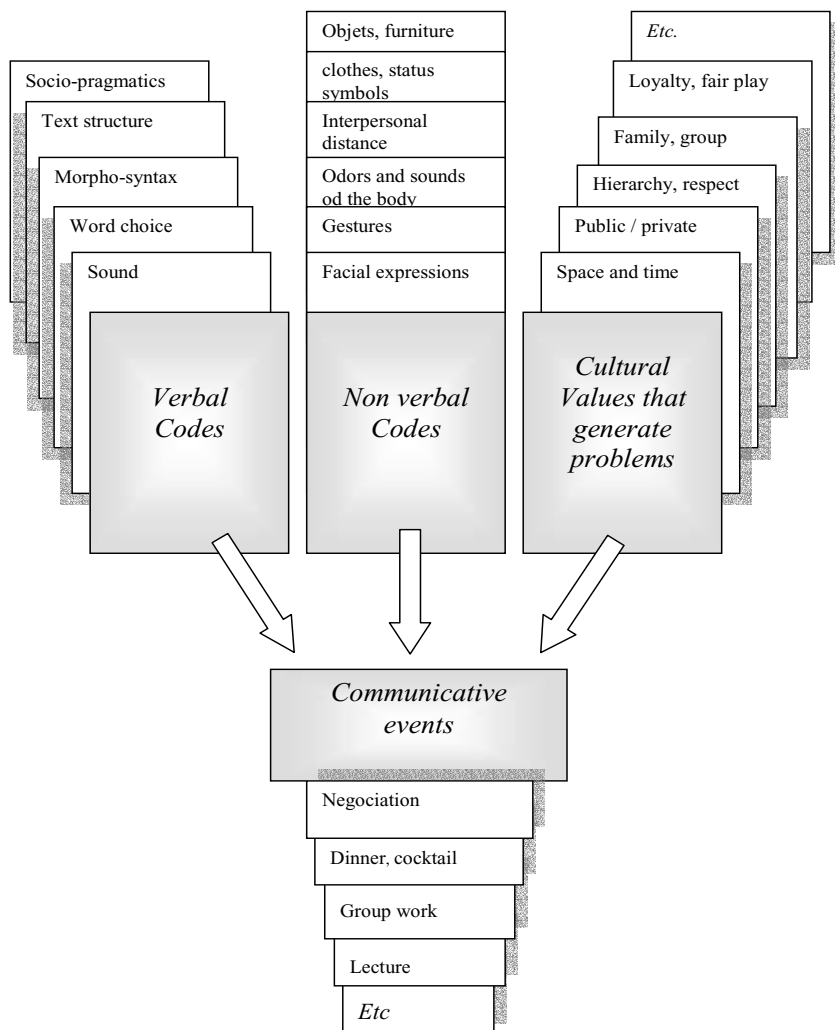
In the spirit of Hofstede’s metaphor, such a simple and economical model includes:

- a. the *software of the mind*, that is, the cultural factors that influence communication: not *all* the cultural factors (essential for operators in intercultural pedagogy, European citizenship,

integration of immigrants, etc.) but *only* those factors that can introduce critical elements in communication;

- b. the *software of communication*, that is, verbal and non-verbal codes. The main problem in communication derives from the fact that the attention of a non-native speaker is focused on lexicon and morphology-syntax, omitting the non-verbal languages because they are considered natural, universal;
- c. the *software of the context*, that is, the socio-pragmatic software that rules the beginning, the path, and the conclusion of communication (in its ethnic-methodological meaning).

When graphically represented, this model of intercultural communicative competence (on the next page) reveals all its simplicity; the shape of the icons used for the three grammar groups (verbal, non-verbal, contextual) suggests that this model is built with layers of profundity and at the same time it preserves an extremely simple and manageable superficial structure:



This schema does not require particular explanations: it simply shows that in order to act with awareness and intercultural appropriateness in a communicative event, or to observe events and draw information through self-creation of intercultural maps, it is necessary

- a. to observe verbal and non-verbal codes, along with the values that produce problems;
- b. to catalogue them in the “cards” used in the above figure.

4. Some models we propose in a new form, thereby increasing their validity

In the second chapter regarding the usefulness of diagrams for the study and the communication of models, we witnessed how a graph that is apparently obvious (three points generate a triangle) could be misleading, such as that which occurred in our motivational model. In other cases our error was not so banal, but nonetheless it still caused defective models. This chapter will describe some of these defective models, and modified them into new forms that partially contradict the previous *Documents*.

4.1 The model of knowledge organisation in LTR

Paragraph 3.1 described the interdisciplinary model in LTR. A corollary to that model is necessary and it must describe the *organisation* of the knowledge deriving from the four spheres external to the discipline, it must establish an epistemological *hierarchy* with regard to the relevance and use of the concepts that constitute such knowledge, and it must determine parameters of *evaluation* for the individual contributions taken from the relevant sciences, contributions that are now applied to the science of linguistic education.

The starting point is the tri-partite structure proposed by Anthony (1972) and utilised by many Anglo-Saxon scholars: it determines three levels of organisation for the interdisciplinary knowledge necessary in linguistic education:

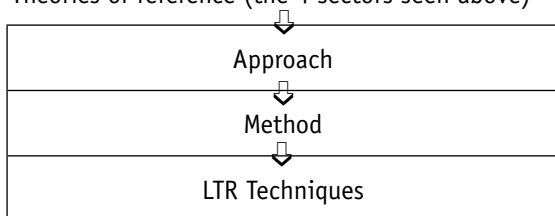
- a. the *approach*, i.e., the leading philosophy of a project for linguistic education: the idea of language, student, teacher. Twenty to thirty years ago, terminological (and therefore conceptual) anarchy was widespread in the discipline, everything was defined as an *approach*: the communicative approach, a true philosophy of linguistic education; the conceptual-functional approach, a method with which to realise the communicative approach; the humanistic-affective approach; the constructivist approach; the

cooperative approach, etc. They were, one and all, little more than psycho-didactic methodologies. In the 1990s, Lewis proposed the lexical approach, which put the lexicon, rather than the morpho-syntax, at the centre of the LTR process. More recently, the CLIL approach was proposed, a simple didactic methodology that can be used in a formalistic approach, a behaviourist approach, and in a communicative approach;

- b. the *method*, i.e., the translation of an approach into practical models, with which to organize the instruction governed by the approach itself. The “method,” as we define it here, is vastly different from the “methodology,” which is a category within psycho-didactics, as are the humanistic-affective methodology, cooperative methodology, constructivist methodology, theme-based teaching, task oriented teaching and the like, most of which were developed by the English LTR schools;
- c. the *techniques*, i.e., didactic procedures: in the Copernican revolution of LTR in the 1980s, parameters were applied to the evaluation of techniques; parameters that are now considered inappropriate (“old/new,” “traditionalist/innovator”), or not properly defined (“right/wrong”: with respect to what?), or that presented political-ideological inclinations (“conservative/progressive”): the result was the banishment of traditional techniques, such as translation, dictation, sentence manipulation, and structural exercises, without considering their usefulness for acquiring, learning, and studying the language.

Anthony’s proposal was a meritorious attempt to set the order, and for years we employed it as a “model”, a model for organising the wide range of knowledge that is necessary for linguistic education. Graphically it was represented vertically, suggesting a hierarchy to its respective levels:

Theories of reference (the 4 sectors seen above)

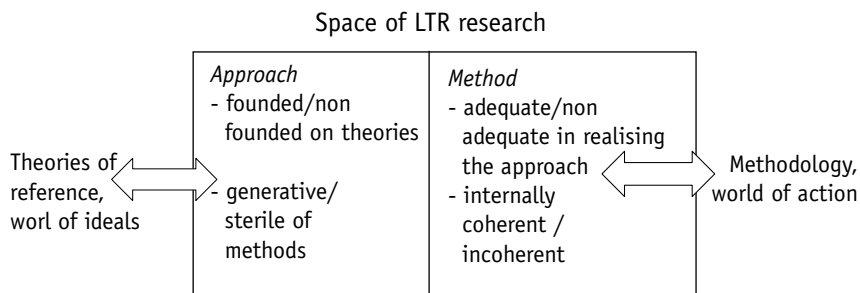


Our contribution to Anthony's "model" was to add, albeit placing them outside the LTR sphere, the role of the theories of reference (linguistic, socio-cultural, psychological, pedagogical), and to specify the relations among the three levels according to a series of parameters (see the graph in the first *Document of LTR*, in 2006).

In point of fact, this structure contained two conceptual defects:

- a. it unbalanced the idea of LTR: on the one hand, the theoretical dimension, the world of "ideas", was placed outside LTR's specific field, on the other hand, the world of "action" was placed inside its specific field, all of which, along with the vertical arrows of the graph, suggested the idea that both the approach and its practical translation into methods had the purpose of determining techniques and operating procedures, and determining the practical dimension. This structure provoked a fracture between the scholars who privileged the approach and its relationship with the sciences of reference, and those scholars who privileged the practical aspect; leading to one group employing its elements to de-legitimate the other (i.e., as "linguists" or "pedagogists"). The last thirty years of LTR throughout the world have been characterised by this unfounded opposition;
- b. it employed, in its functional structure, the universe of didactic techniques, which was indefinable, varying, external to LTR, and it devoted to them a third of its space. The conceptual error was that: if it is true that a model requires interpretative structures (approach) and it must generate schemes of behaviour (method), it is not true that the model itself must be a direct action (techniques).

Therefore, we here propose a revision of Anthony's model that we believe to be a clarifying contribution universally valid and coherent with the model for the science of linguistic education noted above in 3.1:



The following example, that we believe is universally valid for linguistic education world wide, can clarify how to read this model:

- a. given a *theoretical* (the world of ideas) *declaration* (in the cognitive sense of the term noted above in 2.1) such as:
 - “language is realised in a series of varieties”;
- b. it follows a *procedure* (in the cognitive sense of the term noted above in 2.1) specific for LTR, and is placed in the central panel of the graph:
 - “if language is realised in a series of varieties, then it needs to be determined:
 - which variety to insert in the paths of linguistic education concerning mother, second, foreign, ethnic, classical languages,
 - at which stage of the paths these varieties need to be inserted,
 - with which modality: comprehension/production, oral/written,
 - with which level of explicit reflection”;
- c. in order to transform this *procedure* into *action* it is necessary to select didactic techniques (adequate to the method and coherent with the approach) from within the vast range of techniques available in the world of general didactic action.

With a conceptual instrument such as this *model*, it becomes possible

to determine (and probably rewrite on the basis of more coherent criteria) the fundamental lines of LTR's history: it will be possible to determine the approaches (for instance, the formalistic, structural, and communicative *approaches* of the 20th century), and consequently separate them from their manifold realisations into *methods* (so far, the communicative approach has been realised through direct method, situational method, notional-functional method, lexical method, etc.), and from the many methodologies external to LTR (constructivism, humanistic, task based, etc.).

A consequence of this *model* are some relevant "catastrophes" already mentioned above: on the one hand, "humanistic approach" and "constructivist approach", on the other hand, "lexical approach" and "notional-functional approach"; however, both cases are not proper approaches because they focus on a single element of the didactic interaction (the student in the first case, the language in the second case), or on a single area of the science of linguistic education (cf. 3.1), and they fail to define all the other areas. A proper approach, on the contrary, must define the specific implication that it draws from research in all of its possible areas of reference.

4.2 A model of communicative competence and mastery

The concept of "competence" (necessarily complementary to the concept of "performance") involves the unconscious knowledge of the rules of a language by its speaker. In 1975, Chomsky proposed the dichotomy between linguistic competence/performance. Fifteen years later, Hymes changed the adjective: Chomsky's *linguistic* competence was only a component in a larger reality, i.e., *communicative* competence.

A few years after Hymes' fundamental essay, published in 1972, the Venetian school published its first essays: Giovanni Freddi wrote in 1979 an essay on, "Competenza linguistica, sociolinguistica e comunicativa" (*Linguistic, socio-linguistic and communicative competence*); also in 1979, Freddi, M. Farago Leonardi, and E. Zuanelli, wrote a book about "Competenza comunicativa e insegnamenti linguistici" (*Communicative competence and language teaching*); in 1981 Zuanelli proposed an organic synthesis of this concept. Although belonging to the same Venetian

school, the two models of communicative competence proposed by Freddi and Zuanelli were different from each other, as were different the models created in the 1980s and 90s by other Italian schools of LTR. Further to this, R. A. Scalzo (Serra Borneto 1998) proposed to go “beyond communicative competence”. Clearly, throughout Italy there was no longer the existence of a single, shared model. During those decades, the relevant world literature did not attempt to discuss at a high level the nature and structure of communicative competence: the *European Common Framework* and the American *Standards* specified that communicative competence be scientifically given and empirically clear, but they did not propose any model. The Venetian school itself, from the 1980s up to *Document 1* in 2006, proposed a précis model (“communicative competence includes various sub-competences: a + b + etc”). But a précis, a summary, is a list not a *model*, because it does not determine the relationship among components, it only juxtaposes them.

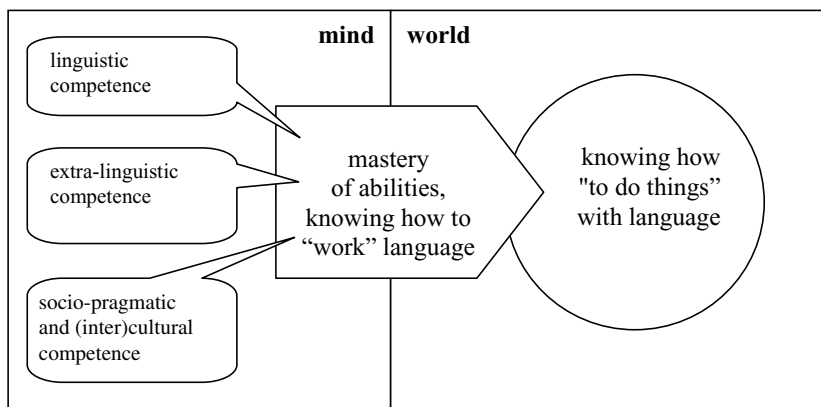
A *model* of communicative competence must respond to this brief question: *what does “know how to communicate in a language” mean?*

The answer resides in the many branches of language science: general linguistics, single language linguistics, pragm-socio-ethno-linguistics, and in the sciences that study extra-linguistic communication (kinesics, proxemics, objectemics, vestemics). On this basis we can define a model of “linguistic competence” i.e., a mental construction which includes the rules that govern language, and we can define a model of “extra-linguistic competence,” which concerns non-verbal codes. These are *competences* and, as such, they are mental representations, unrelated to real phenomena: the competence to judge the grammatical structure of a sentence exists in a person even if no sentence is spoken in the *hic et nunc* of where the person is.

The same term, *competence*, in Hymes’ model means mental reality as well as *performance in a social context*: sentences that are not spoken do not communicate; therefore they do not exist even when they are potential sentences or an act of silence. Hymes is not proposing an application of *How to Do Things with Words*, developed ten years before: according to Austin, the locutional strength in verbs such as “to condemn” or “to absolve” is inherent within itself, independent from the fact that they are enunciated or not, while according to Hymes, only

performance transforms “condemning/absolving” from the object of a pragma-linguistic reflection into the object of analysis with respect to the parameters of communicative competence.

Contrary to Chomsky’s mental competence, Hymes’ one needs a tangible realisation: a “mastery,” a “knowing how to work language,” which translates mental reality into social action and which transforms “knowing the language” into “knowing how to work with language.” This whole complex constitutes the “communicative competence” and it can be graphically represented as follows:

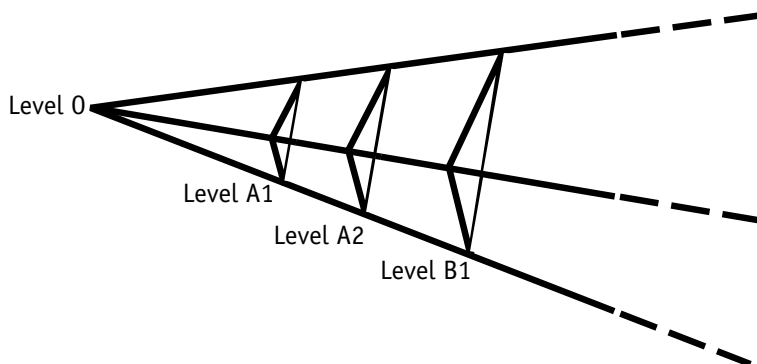


This model was developed by a group of graduate students and scholars at the Venetian Doctoral School and we consider it valid. It is economic in terms of the factors used, it is generative on a LTR plain because it provides a map for the development of methods and, from the practical point of view, gives a choice of didactic techniques to employ.

The elements in the squares are the same as the summary or précis we proposed twenty years ago (and that are still used in different disciplines under different names or categorisations), with the difference that here they are part of two worlds (mental realities and pragmatic realities) and they are connected with each other through a relationship that permits communication in a language. This serves to contribute to the answering of the initial question.

The above graph represents a structural diagram of communicative competence; it is also possible to represent a dynamic and evolutionary

diagram, which starts from a “zero” level of competence and shows the progressive increase in a series of stages:



This particular graph is ideally read in the following manner: the three faces of the pyramid correspond to the three components of the structural model previously mentioned. The two faces connected to mastery and to performance are visible (knowing how to work language and knowing how to work with language), the other is not visible but equally essential for the construction of the pyramid (knowing the language, knowing extra-linguistic languages and the socio-pragmatic rules). Then there are a series of perpendicular “cuts” (stages) that divide the pyramid into sections (here labelled with the levels established by the European Portfolio of Languages). The LTR action progressively moves the base to the right, indicating the increase in the degree of communicative competence of the student. It is obvious that, if only one face of the pyramid is developed, for instance the socio-pragmatic aspect rather than the “grammar,” its base is not perpendicular to the axis any more, and so the pyramid will be slanted, be unbalanced.

4.3 Synthesis

In this chapter we critically reviewed some models we proposed in the past, and which later presented some defects:

a. The model of knowledge organisation in LTR

We recalled Anthony's tripartite model, which showed the existence of a hierarchy in LTR knowledge: the approach at the apex, the method in the middle, and the didactic techniques at the base. We then transformed it into a quadripartite structure: on one side there is the world of ideas, the theories of reference external to our sphere; on the other side there is the world of didactic action, including all its methodologies and techniques; in the centre there is the world of LTR research, divided in turn into a sphere for the definition of theories in linguistic education (approach), and a sphere for the practical translation of these theories (method).

b. The model of communicative competence and mastery

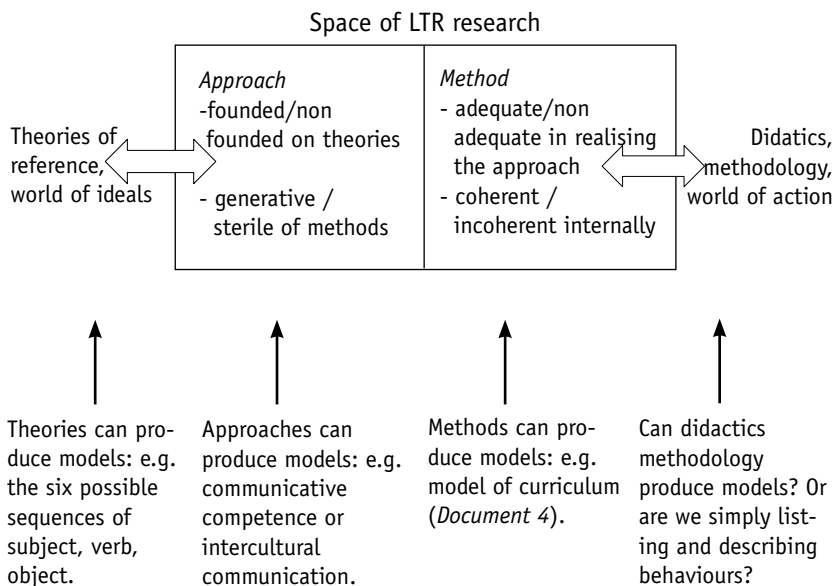
The concept of "communicative competence," on which the Venetian school has been working extensively since the 1970s, has always been proposed by us in a quadripartite form, in which four types of "knowledge" were juxtaposed: language (linguistic competence), non-verbal codes (extra-linguistic competence), to know how to work language (to implement language abilities), and how to work with language (socio-pragmatic competence). In its new version, this model of communicative competence recaptures the epistemological organisation of LTR described above, and is therefore articulated in two parts: on the one hand is the world of ideas, the mind, where the linguistic and extra-linguistic competences reside, on the other hand is the world of action, of performance, where socio-pragmatic and (inter)-cultural competence is realised. Joining the two worlds is the "mastery" of abilities.

5. The impossibility of operational “models”

The fourth volume of these LTR *Documents* was titled *Operational models for linguistic education*. If as we said, a model must be valid in order to describe/explain *all* the aspects of its object or of a phenomenon, then many of the models mentioned in that *Document*, and that are the object of discussion in the methodological-didactic area of LTR, are not proper models but simple *procedures*. To be sure, they are certainly optimum procedures, standard procedures, or procedures of reference, but equally, they are not *models*.

5.1 Theoretical “models” and applicative “procedures”

In order for the diagram in section 4.1 to be complete, it needs to address certain key questions:

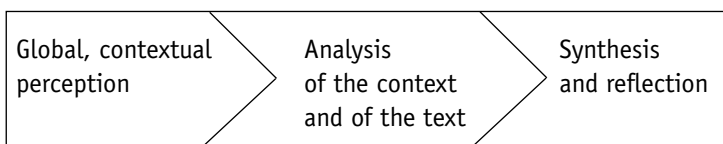


In order to maintain coherency with the definition of “model,” which must generate behaviours, we can state that the world of action cannot produce models because it is made-up of behaviours, even if such behaviours (methodological-didactic) can be based on “reference models”. These reference models can be determined by the approach and by the method, as well as by theoretical sciences such as acquisition models, like the one theorised by the Gestalt psychology seventy years ago and later confirmed by neurological researches.

Our definition of the Gestalt model is “acquisition unit”:

acquisition occurs through a global perception at first, followed by a phase of analysis, and it ends with a synthesis, where the mind fixes what it has observed and analysed.

The psychological (more precisely: psycho-didactic) *model* of the acquisition unit can be visualised as follows:



Such a model *generates didactic behaviour*:

- a. engaging a text (a dialogue, a poem, an advertisement, etc.) the didactic activities must be directed initially towards its global comprehension;
- b. then to a more complete comprehension that permits it to make some hypothesis on its mechanisms (pragmatic, morphological, lexical, cultural, etc.), permits it to analyse them, to draw a “rule” from them;
- c. and finally permits it to make a synthesis capable of systematising the specific objective that the teacher has for that specific *acquisition* unit.

The “acquisition unit” is a *model*, while the classic “teaching unit”, is not a unique and universal *model*, it is rather a *procedure*. In the

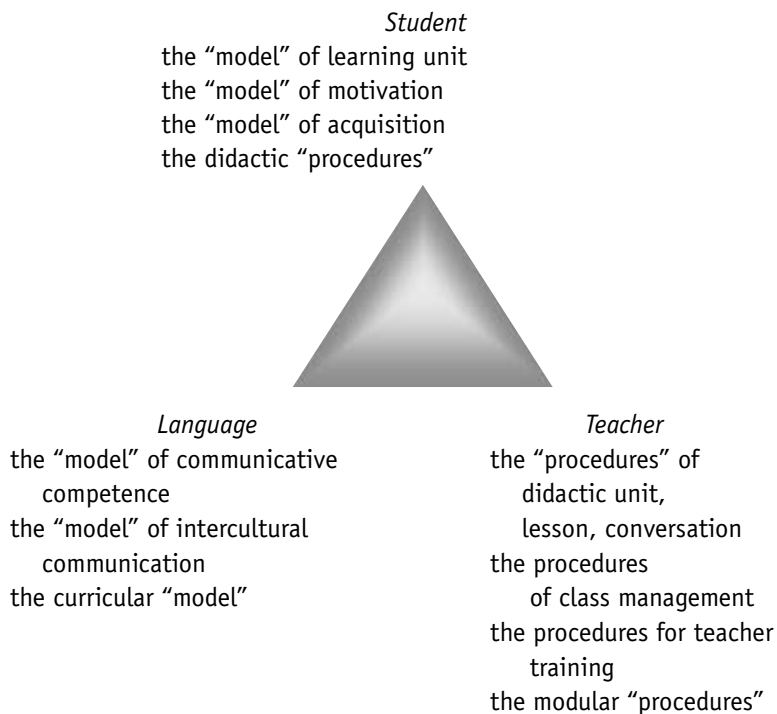
methodological tradition there are at least three procedures, three organisational schemes:

- a. the *conversation*, in the sense employed by Socrates in ancient Athens and still used in many of the graduate courses in today's universities: the teacher (the *magister*, from *magis*, "more, plus", recognised as such by the students) converses on a theme and, together with the students, tries to reach the "truth," which can be one aspect of the syntactic function, the distribution of words inside a semantic field, the nature of LTR, etc.;
- b. the *lesson* (from the Latin word *lectio*, reading), where an authorised interpreter, anointed with an all but priestly prestige, lectures on a "sacred" text (the Bible, a grammar, a literary text) and comments on it to the students, who in exchange accept the teacher's competence as an act of faith: in total, this is the form of "traditional" didactic materials;
- c. the *teaching unit*, i.e., a sequence of acquisition or learning units, of phases of presentation, practice, production, of macro-phases of globality, analysis, synthesis: in recent decades this is the methodological form used almost universally in didactic materials.

Although for decades we have been speaking about a *model* of teaching unit, this is actually a *procedure*, and no *procedure* is a universal *model*: procedures are *schemes* of reference, they are *formats*. For the same reason there is not a modular *model*: the teaching module is a *procedure* that leads to determine certain sections that are autonomous, complete within themselves, certifiable, able to be accredited, but it is not a model that can be applied universally.

5.2 The language and acquisition "models" and the teaching "procedures"

Below we illustrate in a graph the model of "didactic space" mentioned in the second paragraph: this will show that to each pole correspond possible "models" and "procedures":



With respect to the model of didactic space, the analysis of models and procedures illustrates that:

- a. *models* were developed that highlighted the “primary” components of the model (the subject who learns and the object of learning, language), whereas, with regard to the component that puts in relationship the subject who learns and the teacher, there are, as of yet, no *models* but only *procedures, schemes, guide-lines* of reference;
- b. when the primary components (the subject who learns and the object of learning, language) are in relation with the teacher they generate *procedures*: the student who wants to learn must arrange with the teacher, or accept from him, certain “procedu-

res" of acquisition and learning, must define spheres of content (modules) and divide them through procedures of transmission (lessons), procedures of acquisition (the acquisition unit is the only procedures founded on a strong model), and procedures of organisation (teaching unit);

- c. the teacher, as an agent who initiates and manages the relation between the student and the language, uses *schemes* and *procedures* of reference.

The teacher applies the procedures to the *language* by defining a curriculum, by defining eventual modules, and by determining the contents for the acquisition units, which he then assembles into more complex teaching units – the former meant for the students, the latter for the teachers.

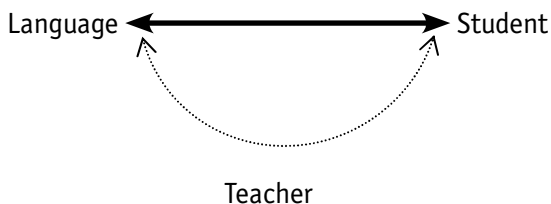
The teacher also applies the procedures to the *student* by choosing humanistic methodologies rather than structural-behaviourists ones, constructive rather than transmissive and so on, according to his or her pedagogic perspectives.

However, a didactic procedure does not exist that is universally valid and suitable for all ages, all languages (mother, second, foreign, etc.), and all contexts.

For the teacher, as a professional who needs constant training, there is a "formative model", but also in this case "model" means "guide-lines" and "procedures".

Therefore the teacher has an instrumental function in the process of establishing the relationship between the subject and the object of linguistic education.

On the basis of these reflections we can redraw the traditional triangular scheme, wherein the arrows indicate the relationships and the hierarchy:



The fact that the learning content (language and culture) and the subject (student) are associated with “models”, whereas the teacher is associated with relational or operative procedures, does not place these three elements in a hierarchical position as regards their quality (models must be true and generative, procedures must be effective and efficient), but it does, however, makes their respective roles extremely clear. Student and language are in relationship with each other, and the teacher has an auxiliary function, he is useful for a purpose. As Von Humboldt remarked two centuries ago: “languages cannot be taught, we can only create the condition for somebody to learn them”. Teacher training therefore has a determinant role because a teacher’s function, albeit an “auxiliary” one, is essential, necessary.

5.3 Synthesis

In this chapter we described the frequent use of models when speaking about the object of learning, such as the model of communicative competence mentioned in the previous chapter, or the several other linguistic models discussed elsewhere.

We also described the frequent use of models concerning the subject who learns, such as the motivational model (highlighted in the third chapter), the Gestalt model of acquisition, Vygostky’s model of the “zone of proximal development,” Fodor’s model (or maybe hypothesis of model) of mental modules, Johnson-Laird’s thought model, and so on.

Conversely, concerning teaching and didactics there are no “models,” rather only “procedures,” often of different natures and as alternatives to each other.

This does not disqualify the didactic dimension, rather it suggests

holding in consideration the models available to the language/culture and to the student, in order to adopt procedures that are coherent with such models.

6. Conclusion

We started with the conviction that the science of linguistic education (LTR, or educational linguistics, or didactics of languages, whichever name is preferred) is an interdisciplinary science, which procures knowledge from theoretical and practical sciences external to its sphere, and it uses this knowledge to organise and manage the process of learning/teaching any language.

Recalling what Giovanni Freddi used to state in his lessons that formed the foundation of the Venetian School of LTR: the interdisciplinary and operative nature of LTR risks becoming a “Harlequin dress”, made by juxtaposing and roughly stitching together different fragments from other sciences.

This risk can be avoided only by determining models of an interdisciplinary nature, declarations that are “true” (in terms of their logic, we referred to the theory of models) and “substantial”, models that concentrate on the constitutional elements, eliminating those that are accidental and accessorial (in short, the cognitive science’s concept of “model”).

We then retraced the history of our LTR research in which we tried to develop new “models” and to adapt to linguistic education other models created for other scientific “truths”. We did this unconsciously at first, and only recently consciously, until we discovered that in many cases we had misused the term “model” for what in fact were actually “procedures,” albeit certainly reliable, developed upon scientific bases, but just procedures that were not necessarily universally true.

We hope that the effort behind and the spirit imbuing this *Document*, prompted in no small part by the international scholars who offered their contributions (derived from their reflections on the previous *Documents* in this series), will lead other scholars to investigate the nature of knowledge and of the LTR action, with a view to building increasingly solid bases for a discipline that otherwise risks slipping towards applied linguistic or psycho-pedagogy. To be sure, both are very noble and esteemed areas of research, but they alone cannot adequately explain and manage a complex process such as linguistic education.

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