

A FEW COGNITIVE ISSUES IN MULTIMEDIA LANGUAGE TEACHING.

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What will the effects of the multimedia revolution in terms of language teaching be? Multimedia actually means the integration of the equipment but this does not necessarily entail an integrative cognitive process.

Applied linguistic research does not currently provide any model that would answer the question of knowing if multimedia tools impose a new cognitive structuration of the linguistic content.

The development of multimedia language teaching should therefore call for a new type of didactic research aiming at establishing new learning models.

MOTS CLEFS : NOUVELLES TECHNOLOGIES EDUCATIVES. INTEGRATION. INTERACTION. APPRENTISSAGE DES LANGUES. INTERACTION HOMME/MACHINE. MODELES COGNITIFS. MODELES MENTAUX. MODELES PSYCHO-LINGUISTIQUES.

Quels seront les effets de la révolution multimédia ? Le multimédia signifie l'intégration des équipements mais cela ne signifie pas pour autant une intégration des processus cognitifs.

La recherche appliquée en linguistique ne permet pas, pour le moment, de répondre à la question de savoir si le multimédia impose une nouvelle structuration des contenus linguistiques.

L'introduction du multimédia dans l'apprentissage des langues devrait donc favoriser un nouveau type de recherche didactique visant à établir de nouveaux modèles d'apprentissage.

INTRODUCTION

One of the paradoxes of language teaching is that it has been among the first to incorporate other media than the textbook in the classroom process, with the introduction of audio-lingual material in the 60's, and yet it seems to have difficulties in integrating the computer revolution and multimedia language teaching. At the international level two conflicting trends are perceptible: on the one hand, multimedia language products are winning more and more shares of the language educational market. According to Intercop, in 1995, 41% of multimedia station sales in the States will concern the educational market; according to Frost and Sullivan, the figure for Europe will be 23% of the global multimedia market. Policy-makers support research and developmental programs, but on the other hand, the same policy-makers, considering the cost of such equipment, also betray a growing concern about the actual efficiency of New Technologies. Evidence of this concern can be found in the launching of international programs, aiming at researching into the implementation of multimedia equipment and new educative technologies. These evaluations seek to take multimedia results in the fields of learning and training into account.

In France, multimedia language teaching -which means statistically, primarily, English-teaching seems to make its way slowly in Higher Education and surely has a future with the development of Language Resource Centres. The latter development follows the trends born from the institutionalisation of "open learning" which are now gaining in the field of education : individualization of the teaching process, self-learning commodities, guided autonomy, flexibility, etc. (Perrin, 1992). The term "resource" refers predominantly, though not only, to the material supplied by multimedia equipment. Because they afford a flexible form of teaching, multimedia language centres are expected to partly resolve the problem of the student "boom" which has affected French universities in recent years. Furthermore, it is claimed that they provide a more attractive pedagogy, a more authentic linguistic content and an-up-to date cultural content. In a long article devoted to the challenge now facing French universities, because of the "language issue", G. Courtois (1992) asserts that «...all hopes now lie with the new technologies of communication, which associate, thanks to the video disk and the computer, the written, the audio and the visual message, and make it possible to devise more attractive and more flexible learning methods». And yet, there is no doubt that the development of multimedia teaching still gives rise to polemical discussions among the teaching profession : in fact the debate is still in full swing and those that press the cause of innovation find difficulties in silencing those that stress its cost and its complex

implementation. Patrick Suppes, while inciting both sides to "stand back", compares the introduction of the instructional computer to other major educational innovations : written records, libraries, printing, mass schooling and testing. He points out how they all met with tremendous resistance and, in the case of printing, "how slow the impact of a technological innovation can sometimes be"(Suppes, 1992) "To stand back" is precisely the aim of both authors of this article. While considerable research has been carried out into the use of computers in education, not enough case studies and research are yet available about multimedia language teaching. Yet it is undeniable that the problems raised by the latter are of the same nature as those raised by the former. Therefore, the bulk of the research and case studies about CAI CMI may very well serve as a framework with a view to probing into foreseen multimedia trends. For, although little evidence is yet supplied, sellers of multimedia courseware are emphatic about the learning successes of such equipment. Such claims can only lead researchers into critically surveying these claims.

Two reflections are at the root of this contribution :

The first one is that, in most cases, in the field of multimedia English training or teaching or learning, engineers and technicians have always been ahead, while teachers have always been behind, striving to devise a new pedagogy imposed on them by new tools. This is a very well-known fact, usually pointed out by distressed sales executives of big companies, who feel that in many cases the teaching profession has helped to hamper the development of multimedia training products instead of prompting it. It is very well-known that the lack of collaboration between technologists and teachers has led to mis-used or ill-used equipment. The question is : should the blame be placed solely on the teacher's fear of progress ? While producing multimedia material aimed at teaching and learning, have manufacturers sufficiently taken into account the didactic side of the question ?

A second reflection, concerns the notion of integration It is used by technologists, it is used by pedagogues, it is used by researchers in language learning. The question is: is it not a "blanket word"? What does it cover? Or, more exactly, what does it cover up? Perhaps simply the fact that whatever improvement integration allows in term of space, time, ergonomics etc... We don't really know, in terms of information processing, if an integrated environment automatically means an integrated learning process in the learner's brain.

In other words the purpose of this article is to try and demonstrate : that technical patterns do not necessarily find their counterpart in terms of learning patterns and that resorting to

multimedia for language teaching should mean taking the multimedia as part of the learning model and not merely as a context.

Behind those two questions lurks a more comprehensive one which inspires research on this subject : "is there a didactic specificity in multimedia language teaching ?"

Integrated multimedia instruction

"Educators and educational researchers consistently cite one factor as central to the full development of technology's use -the classroom teacher" (OTA, 1988, p.87) On the educational market it is very clear that the target public of multimedia products is still the teaching profession. As a matter of fact, manufacturers know very well that teachers are likely to influence spending decisions in school or universities, on account of their competence and the fact that they are the potential actual users of the product. It is also well known that they play a crucial role in the context of guided autonomy, in so far as they will influence students, or not, into using the self-access room. In a section entitled "Integrated language study", Shwartz points out that integrated equipment can be a powerful tool but also indicates : «Little research on this approach is available, partly because measurement of the word-processing applications depends on accepted practices and materials, and these are only now being published. In addition, the hypermedia applications are also very new or still under development.» (Shwartz, 1992, p. 45.)

The notion of integration

Although little research is available, it might be interesting to try and estimate whether the fact of combining different media in a single one will entail an integrated form of teaching.

The notion of "integration" in the teaching process is not new. But usually in the literature on this subject the word "integration" is merely synonymous with "use". Yet, as researchers were researching about the "why ?", "what for ?" and the "how ?" of computer use, the notion of integration has soon taken on a qualitative meaning, the computer no longer being used as an "extra", but as part of the planned teaching practice.(Van Den Akker, 1988b, Fullan et al, 1987, Carmicheal et al 1985 , Elder et al, 1987 , Inspectorate, 1986, Wiske et al, 1988).

As Van Den Akker points out «a real integration of computer use in the curriculum can only be realized when teachers recognize the surplus value of computer use» (Van Den Akker, 1992, p. 71.) The same will apply to MMLT : to put it plainly, the real question is : will integrated media actually help to eradicate the drawbacks attributed to discrete media ?

The "new" teaching model

Improvements

In terms of space it is undeniable that a multimedia work stations are less space consuming..Before, a lab-room, even in its most elaborate form, included different working stations : videos, labs and computer stations. A first improvement appeared when the video was integrated in the laboratory. Now, the micro-computer serves as a "support" for data collection, whether audio, visual or written.

But, on the other hand, in terms of time things are not so clear. Of course one can only acknowledge the fact that new systems such as CD ROM or the video disk, make it possible for the instructor to process information more speedily. Perhaps, even more significantly, time will be saved when the instructor is spared all the drudgery, i. e. in the case where students are able to access information on their own : discovering a text, doing an oral comprehension task, looking for some vocabulary, discovering a grammatical rule. This will leave the instructor free for more interesting pedagogic pursuit, (designing lessonware and courseware ; monitoring, tutoring, etc...), than that of being the "input channel" . Does this mean, for all that, a gain of time for the instructor ? It may not be true considering the tremendous amount of time that is required by planning and conceiving the lesson. The question of "time" then requires to pay careful attention not only to the software, but also to the teaching material (courseware including some lessonware), which, combined with the equipment, constitute the teaching apparatus. In other words, in this context, it is again important to distinguish two different approaches : the part played by MMLT as a learning model, and the part played by MMLT in a teaching model.

One of the major assets put forward by MMLT sellers is the greater amount of information that they provide. Confer this extract from a selling brochure :

«SPEAKER enables your teachers to retrieve all the available pedagogical material, either in videos, pictures or drawings, or audio documents, (such as audio cassettes), compact disks, and of course your own voice.

As a matter of fact, thanks to a video card, you can retrieve any kind of video pictures : PAL, SECAM, NTSC, coming from a video tape-recorder, a camera, or a TV set, or satellite TV. Drawings or pictures can be instantly captured thanks to the manual scanner integrated in SPEAKER. Thanks to the digitised card the audio documents are as easily digitised. Manipulating these sounds and pictures is facilitated by the graphic and sound editors entirely





monitored by the mouse. When the pedagogic script of the lesson is already written down, the implementation of a one hour CALL needs only four hours' preparation (20 to 30 less time than most authors' language). » (My italics.)

More information can be processed since more information is collected, thanks to a greater memory capacity. In terms of data collection, having instant access to-up-to date information thanks to video recordings and networks, tele-conference, means undreamed of opportunities . But of course, for the great majority of English teachers in France's Higher Education, such a teaching environment is but a cloud cuckoo land.

More information can be stored: the storing capacities of integrated technologies have kept increasing. It is particularly interesting for both teachers and users who are now able to use computers not only as data banks but equally as a "keeping records" file . For each exercise the machine records not only the student's production but equally the date, the score, the time devoted to the exercises. All exercises can be printed. The scores of all exercises, including pronunciation exercises, are combined in a series of graphs for the sake of evaluation.

Yet, in real terms, the amount of information supplied to the teacher, its authenticity, won't change much. Maybe there will be a greater choice, a better quality of document, but this is not due to the notion of integration but simply to technical progress. Already, in discrete form, the separate media afforded the same potential wealth. On top of it, this enrichment may, incidentally, prove to be a two-edged weapon since one can wonder if the very wealth of the material and its highly sophisticated technical potentialities might not actually overwhelm potential users and discourage some teachers from engaging in the MMLT adventure !

In summing up teachers' difficulties in including the computer in their curriculum and classroom practice, Van den Akker points out explaining factors :

-  complex and time consuming preparation
-  A lack of background knowledge and skills (causing a lack of confidence).
-  Great difficulties in changing the teaching role.
-  Insufficient view of possible learning outcomes.» (Van Den Akker, 1992, p.13).

He then reports on his recent research project, and his successful efforts to diminish these difficulties by providing teachers with "many carefully tested procedural specifications in curriculum material." (ibid p. 73) The courseware thus contained not only software information, but also subject-matter information, directions for lesson preparation and

execution, educational software, some student material (ibid, p. 73). No doubt, MMLT demands that such courseware should be included in the MM package, for the question is not only that of the teacher's competence in manipulating the tool , but also his or her competence in actually taking them into account as instructional tools.

It is true that most courseware provide the teacher with the necessary software and lesson-ware materials. For instance, in terms of class execution pre-planned routines are often supplied. Yet, in the case of MMLT, considering the complexity of the teacher's environment (the classroom setting, the equipment, the students, the environment(s) conveyed via the machines), it is highly probable that the most carefully pre-planned routines will fail in anticipating problems emerging in the course of the execution of the lesson. Faced with a student unable to access or process a particular piece of information, the teacher will have to decide whether the problem lies with the machines or with the student. Then he will have to resort gradually to alternate pre-planned strategies to ensure that the goal of the lesson is finally reached. In so doing he will have to display more and more background knowledge: knowledge of the courseware, content knowledge, linguistic knowledge etc..., and he will have to coordinate these different types of knowledge to make it possible for the student to proceed with the lesson. Here, perhaps, lies the real notion of "integration". In other words he will have to behave like an expert. Without the necessary training, it is difficult to imagine how language teachers can display such levels of expertise. Unfortunately, the training is not yet part of the MML package. Usually, firms offer a one day training session that costs between 3000 and 4000f. This is very expensive considering the fact that the training is merely done by technicians and not pedagogues, and the didactic content is only superficially looked into.

For the moment, despite the development of autonomous learning, the teacher remains an essential agent in MMLT. Yet, it seems obvious that with the development of MMLT, the teacher's role will be more and more diversified. Already we can notice that teachers may occupy three different functions: that of a user , that of a planner (author), and that of a researcher. Considering the enormous amount of time required by the three roles, they are increasingly differentiated, and will, eventually, end up as different kinds of jobs. The foregoing, by no means comprehensive reflections on the interaction of MMLT in the teacher's curriculum lead us to the same conclusions as those, already harped on, about computer integration : i. e. that they are powerful instructional tools provided that they are taken into account as such in a didactic, carefully planned procedure.

MMLT Learning models

Interactive teaching

As most advertisements now insist on the highly efficient interactivity of MMLT, we have decided to focus on this question. Collins Dictionary (1986, p.793), suggests drawing a distinction between interactive and interacting as follows : interactive would take the sense of «allowing or relating to continuous two way transfer of information between a user and the central point of a communication system such as a computer or TV.», while interacting would take the sense of : «Of persons or forces : acting upon, or in close relation with each other .»The first definition accurately corresponds to the transfer of information that takes place in the man/machine system characterised by the multimedia environment, such as defined above. But it is interesting to notice that MMLT advertisers tend to switch, with no warning, from the notion of interactive to that of interacting, i. e to the second meaning : «The learner talks with the computer just like with a teacher. The teacher asks questions, the learner records his or her answers thanks to the microphone, the computer answers him or her and corrects him or her in the most natural way».(My italics). Or, again, «"The Magic computer": thanks to its integrated hyperdocument, the learner, using the mouse, indicates to the computer which object on the screen he wishes to pay attention to. SPEAKER then takes the necessary steps to go on with the lesson.

Someone not conversant with that kind of material can derive from this advert the conviction that the computer actually replaces the teacher, or a native speaker, and that communication in an open language will take place, thus enabling him or her to practice oral expression freely. Yet a closer look indicates that both technical devices and the content of the activities are no revolution. In the first extract, for instance, it is clear the teacher and not the computer acts as a prompt. Now, if the teacher acts as the questioner and the learner tries an answer, what part is left to the computer to play? certainly not that of an interlocutor. It can only bring in fixed sentences corresponding to a closed exercise such as a multiple choice question, or the student has to give a yes or no answer, or choose a linguistic item to fill the gap. In any case, the computer that speaks in the most natural way only participates in a drill or a structural exercise, not in an informal conversation as the advert suggests. In the second document, the learner answers the computer's question. We don't know what kind of question, but we know that providing an answer merely consists of selecting an object for the computer "to use." But we don't know what the personified computer will make of that object as "SPEAKER

immediately takes the necessary steps to proceed with the lesson". This is an extremely limited kind of interactivity.

This is to say that to suggest, as all adverts tend to do, that the new media actually provide the necessary conditions for a real dialogue with the machine in an "open" language is a pure fallacy that should be exposed. Furthermore, the question of the man/machine form of dialogue should be approached not only through its linguistic content, but also pragmatically. A number of pieces of research about this question in cognitive ergonomics are under way, which should bring to light some pragmatic issues. For instance, it is already evident that the teacher's ability to capture and process a great variety of signals put across by a group of learners (gesture, position, mimicry etc..) largely exceeds the machine's capacities. For this reason, it is clear that a dialogue with a machine can prove to be very efficient as far as "problem solving" is concerned (Cf *Socrate*, France's SNCF computerized booking, or information service), but can never emulate a "natural" dialogue. One experience, carried out by Chin (1984), has clearly shown this point : some students were asked to have a conversation with a computer, which was supposed to use an open language, while others were talking on the same subject with a person. Students talking with the computer produced a kind of closed language in which deictic, ellipses, silences, hesitation markers were suppressed. As it happened, the computer was a "sham" computer, they were talking to a human hidden in the next room. This shows that there exist particular modes of man/machine dialogue.

The potential snares of "hyper" flexibility

Many didacticians and teachers would readily support Krashen's view that acquisition will not actually take place in a classroom context, where the environment as well as the language used does not have much in common with everyday conversation in a naturalistic environment. Therefore, they would also agree that any new pedagogical tool which would tend to simulate real settings and pragmatic contexts, is likely to facilitate acquisition. This militates in favour of MMLT. Yet researches have shown that information processing, in the case of human/computer interaction, is an extremely complex process, and that many unexpected problems may arise where no one actually expected them.

In an article focusing on cognitive engineering, Wood and Roth accurately remark : «Understanding the factors that produce complexity, the cognitive demands that they create, and some of the cognitive failure forms that emerge when these demands are not met is essential if advances in machine.» (Woods and Roth, 1988.)

The "getting lost" syndrome (ibid, 1988)

All teachers that have monitored students working on a computer programme have, one day or the other, come across the following situation : the learner is placed in a problem solving situation : for instance he "is" at the bank and wishes to open an account but he doesn't know what procedures to follow; the computer tells him where to go in the bank, what to ask, and what to do. (Pictures help the learner to easily encode and process the context and to understand the instruction. Some graphic help is also provided.) The learner starts with the first procedures and everything goes fine. Then, at one point he calls the teacher : he is lost. He doesn't know where he is in the activity, and what step to take next, although he perfectly masters the situation, the task, and he has the linguistic resources to carry them out. Where's the snag then ? The reason is that in term of attention, and time sequence, he has been unable to follow the commands delivered in the frames. And this all the more as he had to cope with two kinds of frames : those bearing on the software procedures and those bearing on the content of the lesson. At a certain point he has been unable to process all the delivered information . What is interesting to notice is that he would have been perfectly able to perform the tasks, i. e. go through all the procedures, if they had been presented to him or her as in the book. This is an example of how a case situation is transferred from a textbook into a multimedia environment without paying enough attention to the necessary changes required in term of information processing. While using or devising multimedia courseware such problems should be taken into account. This example may seem anecdotal, yet, it is in fact quite significant in so far as it brings to light the question of accessibility and availability in human informational theories. «Education and training tend to assume that if a person can be shown to possess a piece of knowledge, in any circumstance, then this knowledge should be accessible in any condition where it might be useful.» (Woods and Roth, 1988, p.12).

In contrast, researchers have proved that in order to retrieve and use his or her knowledge, the learner should also possess the necessary "skills" . "Skill performance" depends on the context of the problem solving situation. Glaser (1984) speaks of "trigger" conditions or the "conditionalizing" of the knowledge. In the case of MMLT, this raises the following questions: a variety of researchers have shown that some knowledge is accessible in one context and remains inert in another. (Oheng et al, 1986, Bramford et al, 1986, Gick and Holyoak, 1980, Kotowsky et al, 1985) This is equally true of linguistic knowledge. The problem then is to make sure that the chosen context (pictures, sound, text) will actually generate the desired knowledge. If not, the learner may draw the conclusion that the

knowledge is not acquired, whereas it is here but inaccessible because not "triggered" by the context.

MMLT and foreign language learning theories

To most researchers in foreign language learning, the acquisition process, (natural) as well as the learning process, (instructed). (Krashen, 1985), demands that interaction takes place. Most researchers, incidentally, agree that a learning process may facilitate acquisition, but they differ in the emphasis they put on different learning stages. Some view the reception phase as essential whereas others claim that production is as essential as reception. It is perhaps relevant to try and evaluate, tentatively, in what way MMLT may be taken into account in the framework of such theories.

Rod Ellis contrasts what he calls "reception based hypothesis" (Interaction can be hypothesised to contribute to learning via reception and comprehension of the L2,) with "production" based hypothesis" (interaction contributes to learning via the learner's attempts to produce samples of L2).

Reception based theories, (the frequency hypothesis, the input hypothesis (Krashen 1985), the interaction hypothesis (Long 1983)), all more or less claim that the more information you get, the more acquisition takes place. In this approach, it is true that multimedia teaching can greatly increase and diversify the amount of information provided to the learner. The question, though, is how much information will be encoded? How much Intake will take place ? In other words, considering the biological limits of the brain, how much information will actually be processed? Krashen supports the view that this information should be comprehensible in order to be integrated into the learner's interlingua. (Krashen,1985). Information is made comprehensible thanks to inference from the context, and simplified utterances in the course of the interaction. Surely enough, a multimedia context, with its combined sensory channels, may help build up a richer context. On the other hand, one may doubt the computer's superiority over the teacher to provide simplified utterances suiting the learner's existing interlanguage capacities. The interaction theory adds to the input theory the pragmatic side of interaction. Therefore, comprehension and acquisition require not only simplifications, but also the negotiation of meaning, in other words, communicative strategies are needed. (ibid, p.107). In a MMLT environment it is true that in the contextual information learners will find some relevant clues that will help them to build up their strategies and, for a same situation, change their representations, or ask for further information. Yet, in dealing

with the activities suggested, a difficulty will appear if the programme doesn't provide the learners with the procedures they actually need in order to implement their strategy.

The production based theories advance that productions of L2 are not just the result of acquisition but actually participate in the learning process.

The output hypothesis (Swain 1985), did not come as a refutation of the input hypothesis, but as a qualification. For Swain, the flaw in the "input hypothesis" is that comprehension doesn't automatically entail the acquisition of grammatical accuracy. Production is thus seen as an opportunity for learners to try and implement their linguistic resources, thus becoming aware of the importance of grammatical accuracy, i. e. of "pushed language rules", for the message to be put across. Studies supporting this view have shown that communicative competence did not only include grammatical knowledge but the capacity to activate it in specific situations (performance). Swain suggests that pushed output facilitates performance, and that production, contrary to comprehension, may help the learner to move from semantic to syntactic processing (Ellis 1990).

The Discourse hypothesis (Givon, 1979) emphasizes the difference between informal/unplanned discourse -which is developed in the pragmatic mode, and formal planned discourse, -which is developed in a formal / syntactic mode. Ellis comments: «Because different kinds of knowledge and different processes of language use are involved in different discourse types, it cannot be expected that the acquisition of one style will facilitate the use of another style. The term "style" refers here to the learner's internalised linguistic competence.» (Ellis 1984) In terms of production, MMLT do not offer any revolution. Software still propose a number of drills rather than goal driven activities. Yet, some courseware, referring to the communicative approach, are trying to build up situations in which both formal and informal language are needed. Such problem solving, goal driven situations may, very well, be efficient, not because they actually simulate a natural environment, (see supra: Man/machine interaction), but because they simulate parts or aspects of a real context. As such, they could very well be taken into account in a learning model, based on the construction of a context.

CONCLUSION

In fact, the great variety and instability of the theories of language acquisition compel us to approach the multimedia factor very cautiously. In reality, we don't know what improvements they may achieve in terms of language acquisition, but at least we can already be sure that

they should help researchers improve their comprehension of the learning process. This calls for a few remarks concerning second language learning research. One question implied in this exposé, and which is pervasive in educational research, is that of the role devoted to general learning models. The recent history of cognition provides us with three main trends of models : structuralist models, heuristic models, and semantic models. Piaget and his school are among the best representatives of the structuralist trend, although very often wrongly ignored or distorted. The cognitive development is identified by Piaget's school of Geneva as the progressive construction of structures that are at the same time stable and mobile, called "des schemes" (in reference to Kant.) These unconscious "schemes" both assimilate the real word and adapt to the real world, so that can only be known what can be reduced to structures of class computation and proposition computation. A new reality can be assimilated thanks to the formal properties of classes and relations, (the properties of addition, the properties of multiplication, of propositional transformations...), since only these formal properties provide the cognitive apparatus with the necessary mobility. The school of Geneva's program aims at establishing a syntax of the mind which has been wrongly thought to suit only scientific thought, whereas it seems relevant to re evaluate the dialectical process "assimilation"/"accommodation", and the notion of regulation, in reference to linguistic contents which had been largely ignored by Piaget himself.

Heuristic models, the General Problem Solver, launched in 1959 by Simon and Newell, still being the best known, identified human rationality as a polyvalent and context free computational activity. The three notions of "state", "goal", and "means" defined heuristic procedures whose final purpose was the building up of a solving algorithm. Of these attempts, (see Dreyfus, 1972 ; Dreyfus and Dreyfus, 1985), there remains only the hazy notion of problem solving. The ignorance of context and language effects has confined these ambitious programs to solving guessing games or riddles, or elementary maths problems or to computer programs for chess games.

To get over the difficulty, a third trend emerged in the 70's and 80's : the semantic trend, with its even more recent version , the logico semantic one. Drawing on researches on semantic memory, (Collins and Quilliam, 1969 ; Tulving, 1972), semantic models bestow a structuring power on life events and the contents to be acquired, giving thus a part to context and content that had been denied to them by both previous trends. It has led researchers to devise models in which the memory is now seen as a series of frames (Minsky, 1975), or scripts, (Shank and Abelson, 1977). Yet, these new models, when applied to language learning, betray their

limits. As a matter of fact, the specificity of natural languages doesn't lie so much in the fact that they describe stereotyped forms of social life as in the fact that they describe unexpected events with which the subject/learner has to cope. In other words, on the one hand, the context can be seen as a help to retrieve and memorize the meaning of words and sentences, but, on the other hand, words and sentences may be seen as help for the building up of a context.

To a great extent, the didactic approach appears either to ignore, or refute general learning models in favour of models focussed on the domain content. (Here the second language linguistic content.) This seems to us a kind of blind alley, the danger being that of identifying academic knowledge -for instance, here, applied linguistic theories-, with the learner's mental models. In other words, models that properly account for language structures and functions do not necessarily apply to the learner's mental process. On the other hand, domain focussed didactics -foreign language didactic, history didactic, ... often import concepts from other sciences such as sociology, social psychology, psycho-sociology...which constitutes another form of misleading generalisation.

In any case, it is very clear that a holistic, irrefutable, didactic of second language acquisition, or learning, is not yet born, and the reflections we have tried to contribute to the debate are quite open to discussion. For our part, we propose to base a didactic approach of multimedia language teaching and learning, psycho-linguistic models. that will embrace cognitive as well as linguistic research.[1] Yet, such endeavours can only be carried out in the scientific framework of experimental didactic research, as opposed to the subjective realm of holistic didactic research which, in the best of cases, pays lip service to the scientific method by transferring scientific concepts into their well-meaning discourse, and, in the worst of cases, purely and simply choose to ignore it.

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