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## **DIDACTIC AND TECHNOLOGICAL INNOVATION IN LANGUAGE AND CULTURE DIDACTICS: HISTORICAL APPROACH AND CURRENT PROBLEMS**

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### **Summary**

The history of the didactics of languages and cultures since the end of the XIX<sup>e</sup> century shows three main models of the relationship between didactic innovation and technological innovation: (1) the model of didactic determinism, which privileges didactic factors: it would be the didactic evolutions that would lead teachers to resort to such or such new technology; (2) the model of technological determinism, which privileges technological factors: (3) the convergence-divergence model: didactic innovations and technological innovations would only bring about lasting change - i.e. they would only be widely disseminated and sustained - if they met, and in the absence of more powerful divergent factors of other types (psychological, managerial, technical,...). As for the current situation, it shows a series of strong convergences between the two didactic innovations simultaneously in progress - the actional perspective and the plurilingual approach, which are themselves convergent - and the technological innovation in progress, namely the digital.

**Keywords:** didactic innovation, technological innovation, history, modeling, convergences-divergences, actional perspective, plurilingual approach

### **Acronyms**

- CEFR: Common European Framework of Reference for Languages (COE 2001)
- DM: direct methodology
- SAOA: Social Action-Oriented Approach
- L1: source language
- L2: target language

## Introduction

From the point of view of the history of the didactics of languages-cultures –and I include here the contemporary history–, to deal with the theme of the "innovative pedagogies" consists, beyond their simple description, in studying the various factors which explain their birth and their fate. Two types of determining factors are mobilized by the actors themselves in their conduct of innovation, by which they privilege didactic innovation<sup>1</sup>, for some, and technological innovation, for others, to the point that one can speak of two opposing historical models: the model of didactic determinism (chap. 1) and that of technological determinism (chap. 2)

It is a third model that seems to me to impose itself on the historian, with the hindsight that his perspective allows him, that of the convergences-divergences between these two types of factors (chapter 3); and it is also the model that seems to me to impose itself on the current actors if they aim at sustainable innovation, *i.e.* generalized and perennial: innovations do not indeed provoke change - in other words, experiments do not spread widely and settle durably in the teaching practices - unless didactic factors and other factors are present. This is also the model that seems to me to impose itself on the current actors if they aim at sustainable innovation, *i.e.* generalized and perennial: innovations do indeed provoke change –in other words, experiments are only widely disseminated and settled durably in teaching practices– if didactic factors and technological factors meet each other. On the other hand, experiments have no future if these convergences do not exist, and the presence of divergences is likely to lead to the abandonment of innovations that were once integrated into teaching practices.

It is above all when the focus is no longer on didactic or technological factors, but on their complex contact space, that other very diverse factors appear that can be grouped under the generic term "environmental" in reference to the "teaching-learning-use" ensemble considered as an ecosystem of which the actors themselves are a part. Just as much as the technological innovations themselves, for example, come into play in terms of their use, the ease of access to the corresponding equipment and the quality of its maintenance; just as much as the didactic innovations themselves, come into play in terms of the way in which the teachers appropriate them according to their pedagogical culture and their didactic tradition, and how they implement them according to their professional constraints.

### 1. The model of didactic determinism

According to the model of didactic determinism, it is the needs that have arisen for the teaching of the different disciplines (in this case, the didactics of languages and cultures) that lead their specialists –didacticians, methodologists, textbook designers, inspectors, trainers and teachers– to use this or that technology in this or that way in order to realize this or that of its potentialities. Technologies are thus considered as "auxiliaries" (or "auxiliary means"), a key concept in this model.

This model appears clearly in the approach of one teacher when he writes, in a 1905 article entitled "On mimicry in the teaching of modern languages: the role of the magic lantern", that he thought of using this instrument –already produced and used on a large scale at the time in society both in the United States and in Europe– to stage characters so as to obtain from the

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<sup>1</sup> In this article, I will speak only of "didactics (of language-cultures)", even if the main pedagogical principles –active methods, learner-centeredness, the cognitive approach, and more recently project-based pedagogy– have always been decisive factors of didactic innovation.

students, as the official direct methodology (henceforth "DM") then in force requires, an "immediate global grasp" of the characters<sup>2</sup>. He makes a point of stating:

*It is not the childish attraction of this instrument that seduced me; I thought of using it the day I saw that there were limits [in DM], that it required a gradation that was sometimes too slow and too difficult to represent a character. (Marsullat 1905, p. 313).*

The elaboration of this first great didactic innovation, the DM, took place in a very short period of time –it was limited to the first decade of the XX<sup>e</sup> century– but this time was rich in personal experimentation of all the modern technologies available at that time, always put at the service of the three interrelated methods which constitute the "hard core" of the DM<sup>3</sup>:

–*The direct method*, by which the teacher refrains from using L1 in the explanation of L2 vocabulary: images and soon photos, reproductions of which are multiplying in textbooks, magic lanterns, as we have seen above, collections of wall paintings representing scenes from daily life, collections of objects, vegetables or animals in scale models, published by the major school publishers of the time. "Without images, there is no direct method; one would inevitably fall back into translation", thus Charles Schweitzer stated in 1904<sup>4</sup> in the *Teacher's Book* of his textbook *Enseignement direct de la langue allemande* (A. Colin, 1904, Foreword p. VI. Quoted in Puren 1988, p. 94).

–*The oral method*: use of cylinder phonographs for recordings made by teachers from the 1900s. The first documented experiments were made by Louis Marchand "at the beginning of 1900" at the Arago High School in Paris. In 1937, he wrote a delightful account in an article entitled "The beginnings of the phonograph in France". After the very first session, because of the enormous uproar caused among his students by the stuttering of the roller, which was scratched as soon as the sapphire was passed, the general supervisor imposed on him to "bring the phonograph only on days when the neighboring classes were empty" (p. 152). From the beginning of the 1930s, flat discs, which were more reliable, replaced the rolls of the first phonographs, and they were immediately offered by certain publishers with the recording of textbooks.

The radiophony was invented in 1906, too late for the direct teachers to experiment it. School radio was only launched in France in January 1937 by the Ministry of Education, with the participation of members of the APLV, the French Association of Language Teachers (who were responsible for proposing programs in German, English, Spanish and Italian). The first issue of *Langues modernes* to publish an article devoted to radio dates only from this time, with a 1936 article by Louis-André Fouret entitled "Utilisation de la radiophonie dans l'enseignement secondaire. Enseignement des langues vivantes" [Use of radio in secondary education. The teaching of modern languages] (1936a).

–*The active method*: the images are described orally and the models are manipulated by the students, who comment on their actions "live"; the voices recorded by the "talking machines" are used intensively by the students to work on their "diction" and to memorize the texts previously explained and commented on in class. *Living languages* justified their name not only

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<sup>2</sup> In the DM, the global approach is also implemented on texts, where it is a logical implication of the direct principle: an *immediate* contact (in both senses of the word: without delay and without mediation) of the learners with the text as such can only be done in its globality.

<sup>3</sup> This methodological core means that teachers will privilege in their classroom practices all activities that lead their students to speak (oral method) themselves (active method) in L2 (direct method). For a detailed presentation of all the technological innovations mobilized at the time in the teaching of English in schools, one can read the 1985 article by an educational historian, Paul Gerbod.

<sup>4</sup> The following year he became the paternal grandfather of the French philosopher Jean-Paul Sartre.

because they were opposed to Latin and Greek, "dead languages", but also because they were intended to be "lived" by the students in the application of the "active methods" that were revolutionizing school pedagogy at that time. A German teacher, Émile Bailly, exclaimed in an article from 1903: "A language [...] is learned by living this language!"

Here is how Théodore Rosset, at the time Director of the Institute of Phonetics at the University of Grenoble, presented in 1909 what is to my knowledge the first description of a language laboratory in France (note the use of the term "auxiliary"):

*If phonetic writing is indispensable for teaching articulation, phonograph is useful for learning diction. [...] One cannot think of having the teacher repeat the same text until the pupils know it by heart. It would be a lot of time spent on a tedious and thankless task. It would be better to entrust this mechanical repetition to a machine; the phonograph could become this precious auxiliary. [...]*

*Practically, this idea is easy to realize: you need a room, a phonograph, a hundred blank cylinders, a U-shaped table, more or less large according to the number of students. The teacher can very easily record himself or have recorded in some phonetics laboratory the twenty or thirty texts he wants to teach; [...The pupils are admitted at certain times to the phonographic auditorium; they sit around the table, their book in front of them, with the earpieces connected by copper and rubber tubes to the phonograph, which silently bring the sound of the phonograph to each one; the most intelligent or hard-working has the trusted task of starting or stopping the phonograph, and they can thus listen, each to himself, in the midst of the silence of all, as often as they like, to the text to be learned, until they are satiated with it, until they know it. (pp. 239-240)*

"Modern languages" also justified this second name, not only because they were opposed to "ancient languages", but also because they encouraged some teachers to use all the modern technologies of image and voice reproduction available at the time.

Even if the activity described by Th. Rosset in the above passage is, *strictly speaking*, audio and visual since the listening is done with the text in front of the eyes, the term "audiovisual", which will appear later, at the end of the Second World War, under the influence of the *audiovisual aids* already in fashion in the USA, is only used when it is a question of image and sound. In 1951, Robert Lefranc gave the following definition of the French equivalent of *audiovisual aids*: "*Audiovisual means are understood to be all the means made available to the educator, and which appeal either to sight, or to hearing, or to both senses combined*". And he proposes the following table, which informs us about the different technologies used at that time in the teaching of L2 in France:

Hearing	View
Radio Discs Tape recorder	Various graphic materials: images, photos, maps, graphic tables, etc. Projected still views Fixed film Animated film
Sound film, television	

In the meantime, the use of these new technologies had expanded from language instruction -mainly lexical presentation, explanation and training, phonetic training and memorization of texts- to culture, which had been strongly revalued since the early 1920s. The editor of the 1938 instruction writes thus:

[The second "*guiding principle*" of the teaching of foreign languages is that it must *introduce* [the students], *through the choice of appropriate texts, and through the various auxiliary means available to this discipline, to the life of the foreign country: manners, customs, institutions, material and spiritual activity in the past and present.* (MEN 1938)

But the model remains the same, which I call here "didactic determinism". In the first major direct official instruction of 1902, the author feels the need to specify: "The teacher will use the most varied material means and procedures, but he will not make these means and procedures the goal of his teaching" (MEN 1902). And Louis-André Fouret, in a reminder in 1936 of his communication to the II<sup>e</sup> International Congress of Teachers of Modern Languages in Paris in 1931, declares that he presented the talking machine "*only as an auxiliary means which should not modify the principles and practice of our pedagogy*" (1936b, p. 66). We find the same idea again thirty years later, with the general inspector Henri Évrard, who concludes his "Introductory talk" to the Journées d'Études de Sèvres (10-11 January 1963) devoted to "audiovisual aids in the teaching of modern languages":

*The reasoned use of audiovisual material in no way implies the abandonment of an ambitious pedagogy of awakening energies and forming minds. It should only put in the hands of teachers a new tool, at the service of active teaching methods, whose immediate effectiveness and high educational value should be emphasized.* (p. 23)

The analysis that I made in 2001 of all the proposals of communication to the colloquium of March 23-25, 2000 of the Technological University of Compiègne (UTC), devoted to the "*Uses of the New Technologies and Teaching of Foreign Languages*" (Puren 2001) showed that a third of the candidates always followed the model of the didactic determinism, putting the new technologies at the service for example of the motivation, of the autonomy, of the ethical training or still of the simulation in the communicative approach

When H. Évrard made this statement in 1963, an opposite model had already emerged in the teaching of French and English as foreign languages outside of the Éducation Nationale, by which an innovative didactic was claimed to be based on technological innovation. This is the model that I call here "technological determinism", which we will discuss in the next chapter.

## **2. The technological determinism model**

The author of one of the draft papers at this same UTC conference reported on personal research which showed, according to him, that most English teachers still followed this model of didactic determinism, because among them "multimedia is mainly considered as *complementary to a course*" (I emphasize). And he continued: "We question the adequacy of this *representation* »<sup>5</sup>. The title of his proposal, "For an *integrated* use of new technologies" (emphasis added), already announces the thesis he intended to defend in his paper. It is the same thesis that Jean Guenot defended at the time when he experimented with the first audiovisual course for teaching English, *Lend me your ears*, at the Saint-Cloud Language Center. He explained it in a long article in 1959, in which he presented and commented one by one on all the technologies then available:

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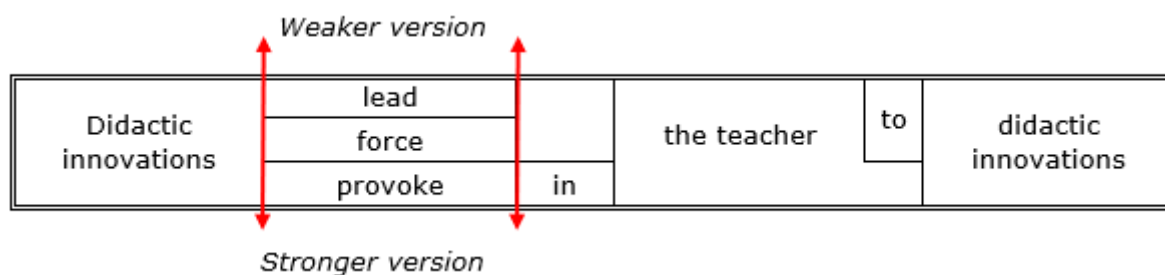
<sup>5</sup> I emphasize: when one wants to delegitimize conceptions, one calls them "representations". This concept is to the generalized criticism of school teachers among some academics what false consciousness was to the Marxist criticism of the alienated masses (cf. Puren 04/05/2011).

*Visual and audio aids can be a useful support for the teacher. They are auxiliaries. On the other hand, the means of coordinating visual and auditory perceptions tend to modify the traditional scheme of the language class (p. 91).*

In an audiovisual class, according to Guenot, the teacher is no longer the center of the class, which seems to him an obvious progress. That he does not realize that a shift in focus from the teacher to the material (didactic and technological) does not constitute progress, but rather a pedagogical regression –with the most directive teacher, there are nevertheless possibilities for interaction in class– can only be explained by a fascination with technology. Jean Cureau, also the author of *Conseils d'utilisation de la Méthode audiovisuelle d'anglais* de Filipovic et Webster (2nd éd. Didier 1968), provides us with a school example in 1971:

*If the explanation [of the audio-visual dialogue] is well conducted, that is, if it is at the same time meticulous, progressive, sober and well centered on the situation, if the questions are skilfully implemented, **a real dialogue will begin** between the teacher and the pupil on the one hand, and **between the tape recorder and the pupil on the other**, in order to allow the child, by successive touches, to perfect his global knowledge of the sentence (1971, p. 13, my emphasis).*

The model of technological determinism is most often based on the idea that, contrary to their simple juxtaposition, the combination of different technologies - their *integration*<sup>6</sup> -, whether organized by the authors of the teaching materials or obtained empirically by the teachers simply because of a systematic use of these technologies, would provoke didactic innovations in the practices of the teachers, or would require them to make such innovations, or would even incite them to do so: These are three positions that can be identified among the authors on a continuum between the strongest and weakest versions of technological determinism. I present this continuum below as a nod to the "structural tables" of the audio-oral methodology, which represented in this form in the textbooks the structural variations of the *pattern sentences*:



The wording used by J. Guenot in the previous quotation points to the strong version, but an earlier passage pointed to a weak version:

*The massive and constant use of television, film or illustrated tapes, can only give the full measure of its effectiveness if there is a considerable change in teaching habits and schedules. (pp. 83-84)*

In most of the texts of the promoters of technological determinism that I have been able to consult, however, it is the formulations themselves that are ambiguous, so that they cannot be clearly positioned on this continuum. Let us judge by the following passage from an interview

<sup>6</sup> The "audiovisual methods" of the 60s and 70s are precisely called "integrated". In my 2001 conference, I called the "integration model" the model of technological determinism.



with Claude BENHAMOU, Professor of Medicine, at the time Advisor for the Digital World within the French National Commission for UNESCO:

[...] *The development of digital pedagogy opens a way to improve the quality of teaching.*  
[...] *There is no shortage of methods that promote the use of new digital tools for teaching and their possibilities are immense.*

[...] *we must not mistake the target: **the "digital revolution" will not do everything, and **will not happen without first radically changing the pedagogy of teaching.*****  
(2016, emphasis added)

Last sentence in French : « *la « révolution numérique » ne fera pas tout, et ne se fera pas sans qu'au préalable la pédagogie de l'enseignement ne change radicalement.*

Indeed, it is enough to change the verb "change" from the present to the past tense ("change" → « ait changé » ["has changed"]) to realize that it is on the sole tense of this verb that the distinction between the model of technological determinism (in a more or less strong or weak version, by the way) and that of didactic determinism is eventually based.

Some texts, however, leave no doubt. The authors of a multimedia English course on CD-ROM at the end of the 1990s put forward as the first characteristic of their product "the multiplicity of media, a guarantee of maximum pedagogical efficiency". By appealing to the strong version of technological determinism in this way, they no doubt thought they would attract as many customers as possible by means of an advertising argument that is also sometimes found among textbook publishers, and that teachers should feel as if they were actually despising them, insofar as it corresponds to a weak version of the importance, or even the credit, given to their professionalism.

An extreme case of a strong version is provided by J. Guenot in his 1959 article quoted *above*, where he gives an example of what he ironically calls "a proud confidence in the machine". He quotes this extract from an issue of the North American magazine *Audio Visual Instruction of the same year*, "A language teacher who does not know Italian is conducting an interesting experiment using tape recordings. She is learning Italian with the class. And he immediately takes pleasure in overreacting precisely in the mode of morphological variations in structural exercises (cf. the bolded variations of the verb "bondir" [to jump] in French):

*En lisant cette phrase, je **bondis**. Tous mes collègues **bondissent**. Nous **bondissons**. Comment cette personne, qui apprend l'italien tout en l'enseignant, peut-elle se faire passer pour un professeur de langues ? » [When I read this sentence, I jump. All my colleagues jump. We Jump. How can this person, who learns Italian while teaching it, pretend to be a language teacher?"] (p. 83)*

J. Guenot provides us in the same article with a good example of the intervention of a social factor, which I can personally testify, as a former Spanish teacher in the very early 1970s, was also very present at that time among inspectors and many Spanish teachers:

*Brochures and instructions for language labs pile up on our desks like skyscrapers from the Middle Ages! But none of this is useful here. American schools and universities are radically different from ours. Our tradition of culture is resistant to cultural machinismo.*  
(1959, p. 82)

The technological determinism model is naturally dominant among multimedia specialists, since integration is part of the nature of this tool<sup>7</sup>. A. -L. Foucher writes in 1998 in the first issue of the specialized journal *ALSIC (Apprentissage des Langues et Systèmes d'Information et de Communication)*:

*The specificity of multimedia for training lies not in the juxtaposition of media on the same support but in the links woven between these different media: this weaving, which we define in terms of integration and interactions, if we want it to be truly at the service of the learner and his or her learning path, calls for reflection on the part of the designers, necessarily ranging from linguistics to semiology, and obviously including didactics (p. 20).*

In this case, it is the designers of multimedia courses who would find themselves encouraged (or obliged?) to innovate in their teaching.

The model of technological determinism has been reinforced in recent years by digital technology, which allows the integration of all available technologies on dedicated platforms, and the digital network - the Web - which makes these technologies available everywhere, at any time and to anyone with a connection, for teaching or learning in synchronous and asynchronous mode. It has been reinforced, even more recently, by the spread of distance or hybrid learning, which makes massive use of these technologies. According to the writer of a "pedagogical action plan" of an official Brazilian organization, the impact on "distance teaching" "*ensino a distância*" [distance teaching] caused by the integration of technologies on digital platforms is such that a different "nature" of education is emerging, which should be called by another name, « ensino remoto » [*remote teaching*]:

*[Thus, it should be noted that remote teaching is not to be confused with distance teaching, the latter being a teaching modality with its own nature and uniqueness. Remote teaching, in turn, goes beyond the possibilities provided by a digital platform, it concerns a set of pedagogical actions that make use of different tools and strategies and mobilize various actors, such as students and their families.<sup>8</sup>*

It is of course the growing power of the effective impact of the various functionalities of digital technologies and the digital network, the Web, that is highlighted when we speak, for example,

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<sup>7</sup> This would justify the use of the term "plurimedia", thus taking up a distinction that is well established in language and culture didactics between "multilingual" and "plurilingual" and between "multicultural" and "pluricultural". This distinction is made by the authors of the CEFR, among others: "**Plurilingual and pluricultural competence** refers to the ability to use languages for the purposes of communication and to take part in intercultural interaction, where a person, viewed as a social agent has proficiency, of varying degrees, in several languages and experience of several cultures. This is not seen as the superposition or juxtaposition of distinct competences, but rather as the existence of a complex or even composite competence on which the user may draw. (COE 2001, p. 168, bolded in the text).

<sup>8</sup> Governo do Estado do Rio de Janeiro, Secretaria de Estado de Educação, Subsecretaria de Gestão de Ensino, *Plano de ação pedagógica* (n.d, May 2021).



of "Digital Competence 2.0"<sup>9</sup>, of "University 3.0"<sup>10</sup>, or again (and necessarily more recently...) of "High School 4.0"<sup>11</sup> and "Education 4.0"<sup>12</sup>.

Finally, the beginnings of the integration of artificial intelligence have given rise to the hope that, to use and extend the expression of our colleagues from the beginning of the XX<sup>e</sup> century, the machine will no longer be only "speaking", but "teaching": we will see later that the idea already appeared in the 1950s and 1960s with language courses made up solely of batteries of structural exercises supposed to function as "teaching machines".

In the text of my conference of 2001 on the occasion of the colloquium of March 2000 of the UTC (cf. *supra* the end of chapter 1), I noted that about a third of the abstracts of the proposed communications belonged to the model of didactic determinism. Another third belonged to the technological determinism model. These are the ones where, for example, the candidates planned to present "a new method of online course", a "virtual class project", "a method associating various multimedia productions", or a device of systematic use of multimedia allowing to generate "certain innovative formative models, carriers of new didactic valences".

### 3. The multifactorial convergences-divergences model

In this model, it is considered that technological innovation can only be widely disseminated and become permanent in the teachers' practices if it "converges", "coincides", or –another possible expression– if it "enters into conjunction", with a didactic innovation; that, conversely, it is little exploited and ends up being abandoned if this meeting does not take place or if there are divergent factors within the technological innovations or between the two types of innovation, technological and didactic; finally, that these two inverse phenomena are all the more powerful as the factors of convergence or divergence are more numerous.

Here are three historical examples:

(1) The adoption of structural exercises in France in the 1950s and 1960s can be explained by a historical convergence between the didactic innovation (structural exercises) and the technological innovation of the time (the tape recorder): a tape recorder is indeed a machine capable of imitating and repeating human speech at will, which corresponds exactly to the

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<sup>9</sup> See 2016 European Commission publication *DigComp 2.0: The Digital Competence Framework for Citizens*, <https://publications.jrc.ec.europa.eu/repository/handle/JRC101254>.

<sup>10</sup> Cf. e.g. *University 3.0: new issues, new scales in the digital age*, Annual Colloquium of the Conference of University Presidents, Full Proceedings, Strasbourg 27, 28 and 29 May 2015, Paris: CPU 2015, 122 p., [www.cpu.fr/wp-content/uploads/2015/11/acte-2015-web.pdf](http://www.cpu.fr/wp-content/uploads/2015/11/acte-2015-web.pdf). The title of the first roundtable clearly indicates the reference model of the organizers: "New audiences, new pedagogies, new training, new jobs: how does digital technology make traditional models evolve?"

<sup>11</sup> See, e.g., "Le lycée 4.0 en Région Grand Est: un projet exemplaire," Site "Régions de France," March 20, 2018, 6 p., <https://regions-france.org/actualites/actualites-nationales/lycee-4-0-region-grand-projet-exemplaire/>.

<sup>12</sup> Recently, in October 2021, I was asked to give a conference in an international congress organized by the UAEH (Universidad Autónoma del Estado de Hidalgo, México) entitled "Educación 4.0". In order to prepare it, I had to start by updating my digital meter, which had lamentably remained at version 2.0: things are going very fast in some Latin American countries, under the influence of the USA... In fact, as I show in my lecture, there is no significant difference in language teaching-learning between versions 3.0 and 4.0, except for the still modest beginnings of artificial intelligence for translation and for learning monitoring. For a detailed presentation of the strong linkage in these countries between Industry 4.0 and Education 4.0, with the latter providing workers with the necessary skills, see the long article Shuvra *et al.* 2020 (in English).

activity of learning grammar as determined by the core of the audio-oral methodology (oral, imitative and repetitive methods), namely the intensive repetition of oral language patterns<sup>13</sup> .

However, at least three environmental factors must be considered to explain its rapid and widespread adoption and the attempt to make it the only mode of teaching and learning:

-This adoption, which can be observed even in teaching materials that do not fall under the North American audio-oral methodology<sup>14</sup>, is explained by a permanent didactic factor, which appears as soon as the objective of the teaching becomes "practical" learning of the language. M. Girard could thus write in 1884 in the *Revue de l'enseignement des langues*:

*It is necessary, by multiplied exercises of pronunciation, to return so often on the same words, the same sentences, that he [the pupil] arrives at not having more to supervise his mouth to pronounce well, than a practiced pianist has, to touch right, to supervise his fingers running on the keyboard (p. 109).*

-This adoption is also explained by the fact that this didactic innovation was based on two scientific factors, cognitive behaviourist theory and distributional linguistics, which converged in the same anti-mentalism<sup>15</sup> .

-To explain the attempt to make it the only mode of teaching-learning in the "teaching machines" experimented in the 1950s-1960s, consisting of batteries of structural exercises in the laboratory, where the learner spent the entire duration of his language course with his headphones on, it is necessary to appeal to another environmental factor, namely the industrial productivity model of the time, Taylorism. These teaching machines, in fact, functioned like assembly lines of language automatisms.<sup>16</sup>

(2) The widespread abandonment of audio-active language laboratories<sup>17</sup> in French high schools during the 1970s can be explained by the conjunction of several types of divergent environmental factors: *psychological* (among teachers, the lack of mastery of the technological

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<sup>13</sup> This is what partly explains the *a priori* surprising idea that we saw above in J. Cureau, that a "real dialogue" could be established "between the tape recorder and the student". In his mind, it is undoubtedly neither a question of humanizing the material, nor of mechanizing the learner, but of a perfect *convergence* between these two "agents", one human, the other non-human, in a type of mechanical activity scientifically legitimized by the antimentalism of the two scientific references of the structural exercise, namely behaviourist psychology and distributionist linguistics.

<sup>14</sup> This was the case in the French audiovisual methodology, and even in some textbooks of the traditional school methodology of the time, the active methodology.

<sup>15</sup> This is another way of explaining J. Cureau's assertion (cf. the note above): students, thanks to the immediate automation of language structures obtained through structural exercises, are supposed to have no more to understand the construction of their sentences than a tape recorder understands what it reproduces.

<sup>16</sup> This is not an isolated case, but rather a constant. Since the revolution of direct methodology in the first decade of the XX<sup>e</sup> century, language teaching has constantly taken up the dominant models of productivity in society: every L2 teacher, in fact, seeks to give his or her learners a production capacity in L2 mainly by having them produce L2 in class (cf. the text of my 2006 conference, entitled "*De l'approche communicative à la perspective actionnelle*" » ["From the communicative approach to the Social Action-Oriented Approach, SAOA"]). About the parallel evolution of innovation and design models in language-culture didactics and business management". The SAOA, whose learning and use action is the project, is no exception to the rule: the project approach has been used in large companies for several decades now.

<sup>17</sup> Each student had his own tape recorder in his cabin, which could be controlled at certain times by the teacher from his master console, but was used autonomously by the student at other times. This example -with all the difficulties pointed out- also corresponds to a personal experience: I did part of my training course for the agrégation in Spanish in 1971-1972 in a high school (the "Lycée Montchapet" in Dijon) equipped with a language laboratory that I used in the conditions described here.

complexity and the anxiety of breakdown, which obliged them to constantly prepare a "plan B"; *managerial* (the difficulty of reserving the laboratory, the need to duplicate classes); *technical* (maintenance problems); and finally *didactic* (the criticism and then the abandonment of structural exercises in language-culture didactics, as well as the lack of interest in phonetic correction in the beginnings of the communicative approach). If we take into account the first three types of factors, we can reasonably think that technological innovation, at least in France, where the working conditions in the teachers' rooms are often not satisfactory, can only become widespread and sustainable in the classrooms if the teachers already use it daily at home.

It is understandable that as a didactician I consider the didactic factors to have been the decisive ones. The audio-active laboratories certainly deserved to be "saved" because they had interesting didactic potential: they allowed, for example, to do simulations of conferences with simultaneous translation, simulations of radio broadcasts and debates with calls from listeners (some of the students, from their booths), etc.; and they currently allow for training in hybrid teaching - the language laboratory is a very important tool in the learning process. The language laboratory is indeed a very special space where the students are both at a distance and in the classroom. Following the hybrid sessions, there are immediate self-assessments and collective reflections on how to work effectively in this type of setting. But for this to happen, a convergent didactic factor would have to be present, namely, for the first examples, the simulation of the communicative approach, and for the last, a "didactic of hybridization" still to be elaborated<sup>18</sup>.

( ) A series of convergences, as exceptional historically as the one that ensured the success of the structural exercises at the time, currently exist between *the technological innovation*, that of digital technologies and the Internet, and the *two didactic innovations* that we see emerging in 2001 in the CEFR (COE 2001), namely the Social Action-Oriented Approach (SAOA) and the plurilingual approach<sup>19</sup>.

-As far as SAOA is concerned, I will repeat below some of the convergences that I presented in a 2009 article(a), between SAOA and digital technologies (DT):

*Convergence 1:* In SAOA, the shift from communicative interaction to co-action. Among the DT, wikis and other collaborative platforms: they are indeed not tools of communication, but of action: they allow to act collectively on a document elaborated in common: there is of course communication, but it is only a means to the service of co-action<sup>20</sup>.

*Convergence 2.* In SAOA, documents are used for tasks (as in Internet research to develop a dossier or a presentation), and no longer tasks are used for documents (as in commentary on texts and other "authentic" documents). Among the DT, the Web, which allows learners themselves to access a mass of authentic documents, search engines, text, sound, photo and video processing tools.

*Convergence 3.* In SAOA, give learners' activities an external social dimension. By means of DT, publishing learners' productions on the Web.

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<sup>18</sup> See my essay on hybridization in 2020.

<sup>19</sup> These two innovations are linked to the evolution of the social objectives of reference of the teaching-learning of foreign languages, namely, respectively, the preparation to live together and to act together in a multilingual and multicultural Europe. On SAOA, see the bibliographic section devoted to it on my site at the following address: [www.christianpuren.com/bibliographies/perspective-actionnelle/](http://www.christianpuren.com/bibliographies/perspective-actionnelle/). On the multilingual approach, see Puren 052, note 3, with the bibliography cited.

<sup>20</sup> Document sharing tools clearly differentiate between action on the text (they place changes inside the text) and information about the text (they place comments in the margin).

*Convergence 4.* In SAOA, the shift from communicative competence to informational competence (cf. Puren 2009b). Among TNs, tools for searching, processing, and digitally storing information.

In the case of SAOA, a powerful environmental factor is also at work, namely the increasingly strong demand for active participation by users in the use of digital technologies: it is no longer a question of simply receiving information, or even of exchanging information among themselves, but of creating information personally and even more collectively. This evolution has been identified for a long time by the teachers themselves in the design of their first professional websites. The theme of the September 24, 2008 conference at the ENS (École Normale Supérieure of Paris) devoted to them was announced with a rhetorical question, the answer to which we already knew would be positive:

*The three associations of online teachers Clionautes, Sesamath and Weblettres have developed around mutualisation and cooperative work. Today, they are committed to collaborative work. Does this evolution reveal specific organizational, economic, sociological or pedagogical models?*

In the same way that one could speak, in connection with behaviourism and distributionism, of "scientific innovations" having participated in the emergence of a didactic innovation, one can speak in our actuality of "social innovation": it is not only a question, indeed, of the use of technologies, but of the use of the professional and citizen responsibility on behalf of the social actors: just as some teachers no longer want to simply follow publishers' textbooks, but make their own (which is what teachers have come to do on Sesamath), some citizens no longer want to simply elect their representatives every five years and expect them to inform them during that time of what they are doing as deputies; they want to intervene themselves constantly in public life. In didactic terms, we would say that these citizens have also moved from the communicative approach to the actional perspective. This shift can be seen both in their personal and professional lives, where the fight against cognitive dispersion and "infobesity" requires us to delete as quickly as possible and not to communicate information that we or our correspondents, according to the very relevant colloquial expression, "*do not need*". Contrary to what their respective sizes on the keyboard might suggest, in the management of information the "Delete" key has become more important than the "Enter" key...

*-As far as the plurilingual approach is concerned,* there is also a strong convergence between, on the one hand, these didactic and social evolutions, and a greater integration of distance work in the educational and professional domains, and, on the other hand, the technological innovation represented by online machine translation platforms. In personal distance work, indeed, learners are in a position to constantly call upon this tool, which should lead didacticians and teachers to reconsider the respective places and functions of L1 and L2 (and of L2+n, often available) in the whole system of teaching-learning-hybrid use: this is one of the many challenges of a "didactics of hybridization" already mentioned above.

## In conclusion

In this article, I have considered the reciprocal effects of didactic innovation and technological innovation, or their encounter, as positive. In fact, the reality is more complex: technological innovation often does not imply any real progress in teaching-learning, and sometimes it even causes regressions (cf. Puren 2021, chap. 5 pp. 216-217)<sup>21</sup> .

Even when the effects of innovations are positive, they remain mostly local and punctual, without going beyond the framework of their experiments, and they do not generate sustainable change, *i.e.* generalized and perennial (cf. Puren 2018). There are several sociological models for the diffusion of innovation in general (cf. Puren 2016), but we suspect that one of the indispensable conditions for aiming at this sustainable change is to take into account the different factors that we have seen historically at work.

In a 2018 conference about university teaching of French as a foreign language, I proposed, for example, that they be integrated into the following overall approach, which combined the various assumptions about the relationship between didactic innovation and technological innovation):

1. Start from the available coherent sets of didactic innovations: we have seen that these are currently the plurilingual approach and the actional perspective (disciplinary postulate)<sup>22</sup> .
2. Identify the didactic potential of existing technological innovations: this is the consideration of technological factors.
3. Identify the convergences between the didactic and technological factors, but also the divergences between them, as well as between them and the environmental factors. These must also be taken into account at the last stage of the process.
4. Adapt the new devices as much as possible to the acquired experience of teachers and learners in terms of ordinary uses of technological innovations. (slide 37).

These are also environmental factors that appear to be decisive in the feedback from university change projects designed around the massive use of digital technologies, first and foremost a strong institutional commitment over time and a common pedagogical reform of all disciplines (see Puren 2022, slides 59-62).

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<sup>21</sup> I had planned to address the ideas presented in this conclusion during the lecture I was to give at the June 2022 APLIUT conference, which I had conceived as an extension of my present text, but I had to cancel for personal reasons. To help apologize, I refer to several articles where I have already made the first presentation.

<sup>22</sup> As a didactician, I naturally place at the beginning of the approach the consideration of didactic factors, mobilizing the postulate that these are the most determining factors... For another proposed approach, adapted to the LLCE (Langues, Littératures et Cultures Étrangères) university stream, cf. Puren 2017, chap. 8 "The seven pillars of sustainable change", pp. 13-18).

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**N.B.** This article cites numerous issues of the APLV journal, *Les Langues modernes*, which was initially called, from May 1903 until 1907, the *Bulletin de la Société des professeurs de langues vivantes de l'enseignement public*. These first issues can be consulted and downloaded freely online: <https://gallica.bnf.fr/ark:/12148/cb34428065j/date>. *The following issues*, between 1907 and 2003, are also available on the same Gallica site of the B.N.F.:

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