Felix dubitatio!
Uncertainty and complexity in didactics of languages and cultures

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> "The future is called uncertainty."
> Edgar Morin, *Les sept savoirs nécessaires à l'éducation du futur* (1999)

> "The collapse of solid but misleading certainties [...]
> becomes the very space of freedom."
> Karl Jaspers, *Introduction à la philosophie* (1950)

Abstract

The complexity of the objects and processes that are constitutive of the didactics of languages and cultures, as well as the diversity and heterogeneity of the learners, structurally confront the teachers with complexity, and therefore with uncertainty. This is the reason why most teachers have always implemented an empirical eclecticism in their classrooms, instead of the necessarily simplifying coherence of all the constituted methodologies that their institutions often wanted to impose on them. It is for the same reason that the discipline, when it finally took this complexity into account, had to add to its first "methodological" perspective, first the "didactic" (or meta-methodological) perspective in the early 1970s, and then the "didactological" (or meta-didactic) perspective, from the early 1980s. This historical evolution of the discipline came up against, and continues to come up against, three forms of reductionism: theoretical, technological and practical applicationism; the second, reactivated by the emergence of digital technologies, has recently been reinforced by the intensive use of these technologies to ensure the so-called "pedagogical continuity". The article proposes what the author calls, alluding to the

current pandemic, "some off-patent components of the anti-certainty vaccine": teacher training in the epistemology of the discipline, "learner-centeredness" and the "project approach". He concludes with the idea that since the language classroom is a place and a time for collective learning in a complex environment, it can function as an "incubator" for the skills now required in a professional world that is also confronted with complexity and uncertainty.

Résumé
La complexité des objets et des processus constitutifs de la didactique des langues-cultures ainsi que la diversité et l'hétérogénéité des apprenants confrontent structurellement les enseignants à la complexité, et donc à l'incertitude. C'est la raison pour laquelle la plupart des enseignants ont toujours mis en œuvre dans leurs classes un éclectisme empirique, au lieu de la cohérence forcément simplificatrice de toutes les méthodologies constituées que leurs institutions ont souvent voulu leur imposer. C'est pour la même raison que la discipline, lorsqu'enfin à son tour elle a pris compte cette complexité, a dû ajouter à sa perspective première, "méthodologique", d'abord la perspective "didactique" (ou méta-méthodologique) au début des années 1970, puis la perspective "didactologique" (ou méta-didactique), à partir du début des années 1980. Cette évolution historique de la discipline s'est heurtée à l'époque, et continue à se heurter actuellement, à ces trois formes de réductionnisme que sont les applicationnismes théorique, technologique et pratique; le second, réactivé par l'émergence des technologies numériques, s'étant trouvé récemment renforcé par l'usage intensif de ces technologies pour assurer ladite "continuité pédagogique". L'article propose ce que l'auteur appelle, faisant allusion à la pandémie actuelle, "quelques composants hors-brevets du vaccin anti-certitudes": une formation des enseignants à l'épistémologie de la discipline, la "centration sur l'apprenant" et la "démarche de projet". Il conclut sur cette idée que la classe de langue étant un lieu et un temps d'apprentissage collectif en milieu complexe, elle est en mesure de fonctionner comme un "incubateur" des compétences désormais exigées dans un monde professionnel lui aussi confronté désormais à la complexité et à l'incertitude.

Introduction
 As ecclesiastical Latin is probably not assiduously frequented by many readers of *Studies in Language didactics*, I specify that "*Felix dubitatio!* "("Happy uncertainty!") refers to the expression "*Felix culpa!* "which the Catholic liturgy has taken from a writing by St. Augustine.
 The two exergues chosen for this article together echo, in the secular domain, this idea of an evil producing a greater good: uncertainty is an inherent weakness of

human knowledge (Edgar Morin), but it is welcome because it is what allows us to be free (Karl Jaspers). It is indeed to the extent that the future is uncertain that we can at least partly write it ourselves; if it were entirely predictable, we would be totally predetermined.

Transposed to the didactics of languages and cultures (DLC), the idea is that our freedom in the conduct of the teaching process is commensurate with our uncertainties about the functioning of the learning processes: if the learning processes could be entirely predefined in a scientific manner, if there were a "(truly) scientific didactics", we as teachers would have no room for personal manoeuvre... and neither would our learners. All constituted methodologies, Galisson (1982: 67) remarked, tend to function in language teaching as "systems for constructing certainties and servitudes". *Felix dubitatio!* that Roux, (1994: 9) a Spanish teacher, celebrated in an issue of *Modern Languages* devoted to ethics:

> [...] this is probably the fundamental reason why I love this profession: it is precisely insofar as there are no ready-made answers, no infallible recipes, no technical or psycho-technical solutions, that the profession of educator keeps an ethical dimension. [...]
> This is why our profession implies a real freedom and why we can never claim it enough. That is why it gives us *a real dignity*...

Uncertainty and complexity in science

The editors of *Studies in Language Education* chose to begin their call for papers for this issue on "Uncertainty" with a reference to the "disruptive virus [that] has called into question organization, planning, forecasting, projects, whether in the cultural, political, economic or social fields". The reference is certainly relevant: many viewers must have discovered with astonishment that medical science was not as exact a science as they thought when they witnessed on live television the disagreements between the various specialists and their uncertainties in the face of the multiplicity, heterogeneity, variability and unpredictability of the parameters, which are moreover interrelated, to be taken into account in their forecasts. Since March 2020, we have all witnessed a continuous public illustration of the ontological link between complexity and uncertainty, which would have amply justified the intervention of a few epistemologists in the midst of the incessant parade of epidemiologists[1] .

Some of them would certainly have quoted Morin, who regularly recalls in his work this link between complexity and uncertainty. In his *Introduction to Complex Thinking* (1990: 91-92), he writes

> We can say that what is complex is, on the one hand, a matter of the empirical world, of uncertainty, of the incapacity to be certain of everything, to formulate a law, to conceive an absolute order. On the other hand, it comes from something logical, that is to say from the incapacity to avoid contradictions.

[1] If necessary, one can follow a catch-up session by consulting the online blog maintained by philosophy professors, entitled "Covid-19: ethical and epistemological issues. Carnet de recherche du projet ANR Epancopi", https://epancopi.hypotheses.org.

Thus, for him, education in complex thinking implies a permanent confrontation with uncertainty. One of his collaborative works is entitled *Educating for the Global Age. Complex Thinking as a Method of Learning in Human Error and Uncertainty* (Morin *et al.* , 2003).

In his 1990 book, he notes that progress in knowledge is progress in uncertainty even in the so-called "exact" sciences, because they have discovered the complexity of reality:

> [...] we see today that there is a crisis of the simple explanation in the biological and physical sciences: therefore, what seemed to be the non-scientific residues of the human sciences, uncertainty, disorder, contradiction, plurality, complication, etc., is today part of a general problematic of scientific knowledge (1990b: 165).

The discovery of "principles of uncertainty" due to this complexity of reality is indeed at the very heart of the development of exact sciences during the XXe century: This is the case in quantum mechanics with the physicist Werner Heisenberg (1927), in mathematics with the logician Kurt Gödel (1931), in meteorology with the mathematician Edward Lorenz (1963), or in economics with the cybernetician Heinz von Foerster (1976), scientists on whom many epistemologists, most of whom had a scientific background, were to build: Thomas Kuhn, Karl Popper, Isabelle Stenghers, Ilya Prigonine, Henri Atlan, Bernard D'Espagnat, etc.

Uncertainty and complexity of the discipline "didactics of languages-cultures "

Language and culture educators have not waited for educational scientists to integrate these reflections into their discipline. For example, all of the scientists and epistemologists mentioned above are mentioned in my 1994 *Essay on Eclecticism* (Puren, 1994e: 73-83:), in a chapter entitled "Epistemological Shifts in Contemporary Science," three of whose ten subchapters dealt with uncertainty in the hard sciences. The following chapter was entirely devoted to "The complex epistemology of Edgar Morin" (83-92).

The thesis that I defended then, and which is still mine, is that the eclecticism of teachers, which has been, as far as we can tell, massive and constant in France since the end of the XIXe century, constitutes an immediate empirical response to the uncertainty with which they are constantly confronted by the complexity of their collective teaching project of an object that is itself complex, namely a foreign language-culture: if they do not know exactly how to teach what and to whom, the most immediately available strategy is to diversify their practices, so that each learner can at least find something to do. This can even be considered an ethical principle. I have thus defended the idea of a "structural link between eclecticism and ethics":

> [...] in the absence of an overall methodological coherence (a constituted methodology of the audiovisual or direct type), the application of which to all students was thought to guarantee the best possible results for each one, the maximum variation in the modes of teaching and learning proposed becomes a moral obligation, since it is known that the choice and systematization of certain modes will automatically favour some students and fatally disadvantage others (Puren, 1994b: 4).

The problem is that even this maximum variation in instructional modes may still not be sufficient for the huge potential diversity of learning modes, and that consideration must therefore be given to allowing learners to diversify their learning modes themselves.

My reflections on the epistemology of DLC in my 1994 *Essay on Eclecticism* were not solitary: they were situated within the framework of a historical evolution of the discipline that had begun in the early 1970s in French as a foreign language (FLE), and that I had presented in an article of the same year (Puren, 1994a).

1. Until the 1960s, the didactics of French as a foreign language, like the didactics of foreign languages in schools in France, had remained at a "methodological perspective": different *problems were* identified in language teaching - the teaching of grammar, phonetics, lexis, reading texts, etc. - to which methodological solutions were brought. - to which methodological *solutions* are provided.

2. In the 1970s, the strong diversification of training courses, which attracted teachers of French as a foreign language from all over the world working with very different audiences, on very different objectives and in very different environments, made it impossible to present universalist methodological proposals. As Debyser (1975: 25), then director of one of the two major research centers in FLE, the BELC, writes in the minutes of a round table on the subject

> The discussion is dominated by the following themes: plurality of objectives due to the diversity of needs and the multiplicity of "parties involved", resulting in a greater complexity and, generally, heterogeneity characteristic of internships in France. [This leads the roundtable to question the pedagogical value of the complexity and heterogeneity of purposes that seem to characterize most internships in France.

The disciplinary response of the trainers to this methodological uncertainty then consisted in moving to a "meta" perspective: when an object is perceived as too complex to be mastered from the inside, the only possible strategy is to get out of it, to put oneself "on the side"[2], so as to be able to understand it globally from the outside. This metamethodological perspective corresponds to the so-called "didactic" perspective, the name that was proposed for the discipline in the early 1970s (and that has remained since) to oppose it to both "pedagogy" and "applied linguistics". Neither pedagogical principles nor scientific descriptions of the language object can indeed provide unique, certain and definitive solutions as to the modes of teaching, because the methodology does not only depend on the reference models or theories, but on the aims and objectives, on the environments (of which the actors, in particular the learners and the teachers themselves, are part), on the available materials, on the installed practices (*i.*Finally, the criteria and modalities of evaluation: all these are fundamental but numerous and heterogeneous components of the "disciplinary field" (cf. Puren 044) which is constituted at that time under the name of "didactics of languages".

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[2] This is one of the primary meanings of the Greek prefix μετα.

We can observe in the last part of the last sentence of the following quotation from Michel Dabène (1972: 10), then director of the other major research center in FLE at the time, the CRÉDIF, how the emergence of "didactics" is linked to this movement of complexification of the disciplinary problem:

> We must stop considering language teaching as the application of anything. It is a discipline like any other, which must define itself as such and as such also borrow from other disciplines the insights it needs. It is up to the discipline to pose its own problematic and not to linguistics to elaborate models which we then wonder how they will be applied. It is in this perspective that one could speak of "language didactics", as a specific discipline that takes into consideration the nature and the purpose of language teaching and not only the nature and the functioning of language.

In the 1970s, EFL trainers thus became aware that there are no predefined *problems* in methodology to which predetermined *solutions* can be provided, but only *problems* with possible *management* methods that can only be plural, local, partial and temporary[3] . A trainer working with teachers with different methodological needs - and all of them are, and even each one of them as soon as they move from one group to another, or even from one learner to another - has no *a priori* methodological answer to impose, but only questioning tools and elements for constructing plural methodological answers to propose. So that one of the "seven 'scientific' laws of language-culture didactics" (Puren 078, title of this paper) is the following: "The number of methodological certainties of a trainer is inversely proportional to his level of didactic training. "

3. The evolution of FLE didactics continued very rapidly in the following years, no doubt due to the joint process of universitarization and internationalization of its training, to such an extent that, from the beginning of the 1980s, a new shift to the "meta" occurred; this time, therefore, to a "metadidactic" perspective. Galisson (1986: 108) was the first to name this perspective, proposing to call it "didactological", in an article in which he promoted "a 'didactology of languages/cultures' which reflects on itself and takes charge of the elaboration of its own theoretical models". The confrontation of FLE didacticians with the history of their discipline, with didacticians from other countries and very quickly from different languages, leads them this time to question the complexity of the didactic field itself, and to rediscover uncertainty: it is didactics itself that, this time, is perceived as a problematic. I have noted, in an article entitled "La didactique des langues-cultures étrangères entre méthodologie et didactologie" (1999h), how issues on metadata themes appeared at the end of the 1980s-beginning of the 1990s, in the university journal of reference for FLE researchers at the time, *Études de Linguistique Appliquée*[4] , issues on metadidactic themes such as "ideology" (1985, n° 60), "linguistic

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[3] On the epistemological difference between "problem" and "problematic" (Puren 023).

[4] Very badly named from now on, therefore. Its director, Robert Galisson, had renamed it *ÉLA Revue de didactique-didactologie des langues-cultures.*

policies" (1987, n° 65), "research training" (1994, n° 95)[5] , "curricular issues" (1995, n° 98), and finally epistemology, with an issue (1997, n° 105) on "the concept in foreign language didactics". It is therefore this last theme, epistemology, which has been the driving force behind the evolution of the discipline and which, once it has reached maturity, has led to the question of its relationship to knowledge.

The historical journey I've just traced above is not an exercise in scholarship, because this past is still relevant in DLC for three strong reasons.

1. This succession of the three constituent perspectives of DLC provides a logical principle of progression in initial academic training in this discipline, because it takes students through the different historical phases through which the discipline itself has progressively formed. Other disciplines have long applied this principle of homology, such as philosophy and law[6] . I proposed an implementation of it, following a seminar in July-August 2010 at the Centro de Estudios de Lenguas Extranjeras (CELE) of the Universidad Nacional Autónoma de México, in a document entitled "Arquitectura general de una formación universitaria a la didáctica de las lenguas-culturas" (2010a-es, French version revised and expanded 2010a). In this progression, in fact, each perspective provides some new *knowledge*, but the next one (including the indispensable reflexive returns 3➔ 1➔ 2: see point 2 below) comes to "problematize" them, in other words to prevent them from becoming *certainties*.

I have proposed a similar type of progression, through progressive complexity, in a particular domain of initial university education, that of concepts (2001a: 6-9). In the first stage (up to the Bachelor's degree), disciplinary concepts are "concept-products", i.e. students must appropriate standard concepts as they are presented to them. In a second phase (in the master's program), they are "process-concepts", because students must then problematize them in order to adapt them to their first personal research and link them together in their own conceptual framework. In a third phase, if they become university researchers, they will be partly "constructed-concepts", which they will have had to elaborate themselves for the needs of their research: a thesis is thus evaluated in particular according to the "conceptual gains" that it brings to the discipline. These concepts-constructed by each professional researcher function in the continuation of his research as his own concepts-products, and the complex mechanics of recursivity continues in this way, in a movement of construction-deconstruction-reconstruction that is distressing because it is uncertain:

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[5] As editor in chief of the APLV journal, *Les Langues modernes*, I had also launched and directed in 1994 an issue devoted to ethics in language didactics. All the articles of this issue are available on the Gallica site of the Bibliothèque nationale de France:
https://gallica.bnf.fr/ark:/12148/bpt6k9691027q.

[6] In a book chapter entitled "The Architecture of Complexity", Herbert A. Simon (1962) considers this principle of disciplinary formation as a way of managing the complexity of the knowledge to be transmitted: "[...] one can expect ontogeny to partially recapitulate phylogeny, [and this] has applications outside the field of biology. It can be applied as easily, for example, to the transmission of knowledge in the educational process. In most subjects, especially in the rapidly progressing sciences, the transition from elementary to advanced courses is, to a large extent, a passage through the conceptual history of the science itself" (481).

to have the feeling, at the beginning of each research, that one's competence as a researcher is entirely at stake is a sign of professionalism, and an indication that it is going to be a real research.

2. The three disciplinary perspectives - methodological, didactical and didactological - must be constantly integrated in the recursive or ("dialogical") logic characteristic of complex thinking, i.e. they must be used to constantly problematize each other.
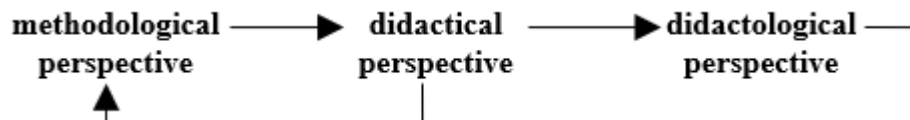
It is the constant linking of these three perspectives that characterizes what I have called, since the late 1990s, the "complex didactics of language-cultures"[7] . As Morin wrote in his *Introduction to complex thinking* (1990a: 67):

> Complex epistemology [...] is the place of both uncertainty and dialogue. Indeed, all the uncertainties [...] must confront each other, correct each other, inter-dialogue without, however, hoping to plug the ultimate breach with ideological plaster. (1990a, p. 67)

3. Progress in DLC, like that of the exact sciences, as Morin says, is progress in uncertainty, at the rate of the complexity of its problems[8] . The reminder and illustration of this fundamental fact of its history is an indispensable instrument in the fight against a natural tendency of teachers to seek reassuring certainties, of trainers and inspectors to establish their power by imposing limiting norms, and of researchers to specialize in partial theoretical approaches that are all the more comfortable because they avoid confronting the limits imposed on knowledge by the empirical complexity of the field.

The reduction of uncertainty is indispensable in the daily practice of teachers, who use various rational means for this purpose: course preparations, textbooks and more or less personal methodological models, etc., but also institutional guidelines or particular proposals from trainers or didacticians. [9]However, this rationality is constantly at risk of being misinterpreted. But this rationality is constantly in danger of degrading into rationalization and thus legitimizing limited practices whose fossilization it will be difficult to avoid. In chapter 1.3, "Les erreurs de la raison" (pp. 7-8) of his book *Les sept savoirs nécessaires à l'éducation du futur* (1999), Morin returns to one of the most recurrent themes in his work, namely the opposition between "closed rationalization", that of exclusive and totalizing theories, dogmas, doctrines

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[7] See e.g. 1998b and my manifesto article 2003b.

[8] For some examples of this progress in uncertainty, cf. Puren 1997d, with two postfaces, "Ten Years Later..." (Sept. 2008) and "Twenty Years Later" (Nov. 2018), each of which adds new contemporary examples.

[9] I have presented some of these means in the article "Ways of managing complexity" (1994d: 7-13).

and paradigms, and "open rationality", conscious of the complexity of reality and the limits of knowledge. He draws the following conclusion that some didactic specialists in linguistics, sociolinguistics and other cognitive sciences would be wise to ponder:

> Hence the need to recognize in the education of the future a principle of rational uncertainty: rationality risks ceaselessly, if it does not maintain its self-critical vigilance, to fall into the rationalizing illusion. This means that true rationality is not only theoretical, not only critical, but also self-critical (8).

Morin would probably not object to replacing "the education of the future" in this passage with "the training of the future". Beginning trainee teachers often have contradictory relationships, which they sometimes experience very badly, with their trainers, from whom they ask for certainty and clear and defined directions, while at the same time they feel that this would be insufficient, or even counterproductive, to manage the complexity of their classroom practices. Hence the two opposing criticisms they make of them, of being incompetent or, conversely, of taking power over them by withholding their knowledge.

In the history of DLC, as in its actuality, rationalization always takes the form of applicationism.

Obsession with certainties and reductive applications

"The heart of complexity" writes Morin (1990a: 43) "is the impossibility of homogenizing and reducing [...]". Yet this is exactly the epistemological project of all applicationism. Throughout the history of DLC, the dominant forms of applicationism have been different, and we find them all in the present day, sometimes combined together.

Methodological applicationism

Historically, it is the great generalist methodologies - the traditional grammar-translation, direct, active and audiovisual methodologies, the communicative approach - that have been the first means of homogenization and thus of reducing the diversity of practices: until the 1990s, at least, training language teachers in classroom practices consisted in training them in the dominant methodology in force[10]. However, as a global coherence, no methodology allows for the correct management of complexity, which explains, if not justifies, the widespread eclectic practices among teachers. All methodologies, moreover, were initially developed according to certain determining parameters, in particular the objectives targeted (e.g. reading or oral communication skills), the audiences (children, young people or adults), the teaching environments (total number of hours, more or less intensive or extensive teaching, number of learners per group, materials used, etc.), as well as the beginnings of the learning process. Among the internal drivers of methodological evolution in the course of history are precisely the difficulties and impasses that methodologies have faced when their promoters have wanted to extend their application for teaching advanced

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[10] On the references to the history of methodologies that I will make in the remainder of this text, I refer to my 1988 book(a).

learners, and/or when they have wanted to extend it to other settings: all methodologies can only be, literally, "victims of their success".

Specialized methodologies, those known as "on specific objectives" (FOS, French for Specific Purposes, *ESP*, *English for Specific Purposes*, etc.) can all the more avoid these impasses and difficulties since they are generally short courses. But they do not allow for a better management of complexity, which is identical whatever the degree of specialization of the contents and the modes of teaching. To illustrate this property of complexity, epistemologists often take the example of fractals, in which the whole picture is found in the smallest detail. It is this same property that has led to the fact that, after "language didactics", we could no longer speak of the "methodology of grammar/lexicon teaching...", but of the "didactics of grammar/lexicon...".

Theoretical applicationism

The great wave of theoretical applicationism arrived in France in the 1960s, following the emergence in the USA of the audio-oral methodology, whose promoters thought they had found "*the* key" to scientific language teaching in the combination of distributional linguistics and behaviourist psychology, implemented in particular in structural exercises. We have seen above (cf. Michel Dabène's quotation) that the discipline "didactics of languages" was constituted at the very beginning of the 1970s by claiming its autonomy with respect to external theories. But the need for certainty among teachers and for academic recognition among university didacticians is so strong that the approach that can be called "scientistic" of the problem of language teaching-learning has been maintained until today.

This is very clearly seen, for example, in the authors of the CEFR (COE, 2001), who justify their refusal to take a position on methodological questions on the pretext that linguistics (87 and 89), cognitive sciences (108-109) and "theories relating to language competence" (23) do not yet provide "to date", "at present", "currently" scientific certainties[11] . These uncertainties would explain[12] , in the eyes of these authors, the eclecticism of teachers, which is cited only once in the document, at the end of the passage below:

> 6.2.2.2 Others believe that in addition to exposure to comprehensible input, active participation in communicative interaction is a necessary and sufficient condition for language development. They, too, consider that explicit teaching or study of the language is irrelevant. At the other extreme, some believe that students who have learnt the necessary rules of grammar and learnt a vocabulary will be able to understand and use the language in the light of their previous experience and common sense without any need to rehearse. Between these polar extremes, most 'mainstream' learners, teachers and their support services will follow more eclectic practices, […] (COE 2001: 140)

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[11] Full citations of these passages and their detailed analysis can be found in my joint work with Bruno Maurer on the CEFR (COE 2001) and its Companion volume (COE 2018): Maurer & Puren, 2019: 49-54.

[12] Or "justify"? The statement is probably deliberately ambiguous.

In this regard, I would like to repeat my following comment, which is perfectly suited to the theme of my present article.

> The authors state several times in their text that "the Framework is not intended to promote a particular teaching method but to present choices. "But they adopt this position only because of their impossibility of imposing their expertise on the basis of scientific certainties: not out of democratic principle, therefore, contrary to what they claim [cf. the 2nd paragraph of extract 2 *above*], and even less because they are convinced that methods must be plural. They have in fact remained with a scientistic conception of knowledge, which leads them to restrict the treatment of methodology, in the absence of certainties, to the simple compilation of the available options, and thus to overlook the only relevant, complex reflection, which concerns the contextual rules of use of each of the available methods, with their advantages, their limits and their possible disadvantages (2015f: 7-8, quoted in Maurer & Puren 2019: 52).

What the authors of the CEFR thus deny is nothing less than the legitimacy of the didactic perspective, and thus of the discipline "didactics of languages and cultures" itself, in the name of a scientism that postulates the primacy of theory over practice. In the epistemology that is appropriate to DLC, we must consider, on the contrary, as the American pragmatist philosopher Richard Rorty (1995) does, that theory is "an auxiliary of practice". Scientism in our discipline is, to use Morin's formula quoted above, only an "ideological plaster" on the cognitive wounds that uncertainty inflicts on some.

Technological applicationism

This applicationism is based on another, deterministic postulate, which is that "new technologies" - these days mainly digital environments, the Web and artificial intelligence - would *in themselves* produce an improvement in language learning. This postulate is already latent in the American audio-oral methodology of the 1950s, the prestige of structural exercises coming in part from the language laboratories. It is found again, this time explicitly, in the French audiovisual methodology, whose promoters emphasized the effectiveness of the combination - displayed in the very name of the methodology - between the oral support provided by the tape recorder and the visual support provided by the projector and the fixed film. It is unnecessary, I think, to give here some current examples of the "techno-literary" discourse, so prevalent is it, even though a consensus exists among didacticians of all disciplines, as well as among specialists in educational sciences, on the postulate of "convergence": a technological innovation can only produce lasting positive change in teaching-learning if it meets a didactic innovation and, undoubtedly, if its use has already become established in the daily lives of learners and teachers (Puren 2009e). It is not at all certain, therefore, that any technological innovation will succeed in improving the "ordinary practices" of a significant number of teachers (Puren 2016d).

Practical applicationism

It can be considered a variant of methodological applicationism, but unlike the latter, it is not a set of practices determined by an overall coherence, but rather more

or less isolated and specific "good practices": it is therefore an even more reductive approach to didactic complexity. One can also speak of a real "ideology of good practices" originally based on the *benchmarking* technique in business management and which has spread in many international organizations - even in the French National Education - for all types and contents of training.

In 2006, the Council of the European Union published a document entitled "Council Conclusions on the European Indicator of Language Competence"[13] in which it asks the Member States to "establish, on the basis of the Common European Framework of Reference for Languages [*sic!*. to validate language skills", in particular because the data thus collected "will make it possible, through an increased exchange of information and experience, to identify and exchange good practice in language teaching policies and methods".

As I wrote in an article (2007a: 3):

> I can imagine the reactions of my French colleagues who would be offered as models the "good practices" of the teachers at the Lycée Louis Le Grand in Paris or La Bruyère in Versailles on the pretext that their students' results in the European test would be the best in France!... There are certainly good practices (without quotation marks) at the Karl Marx College in Villejuif or Jean Moulin in Le Havre, but this is also because they are adapted to their students, and therefore they have no more vocation than the others to serve as models for the rest of France and the whole of Europe.

It is easy to understand why I appreciated Philippe Watrelot's denunciation of the "four pitfalls of innovation", including the "managerial discourse", in the words of the President of the National Innovation Council for Educational Success (CNIRÉ):

> Careful handling rather than management... The CNIRÉ wants us to avoid this trap of overhanging discourse and managerial rhetoric about "good practices" and advocates for "low-key" changes within the National Education (Watrelot, 2017).

This ideology of "good practices" is apparently shared by a good number of teachers, even by those who are otherwise fiercely opposed to the introduction of managerial logic into national education. Among the many colloquia and other study days I have attended, some of them included public evaluations. The best scores were generally obtained by presentations made by practitioners who had developed, or at least experimented in their own classrooms, "innovative practices", with a discourse that was sometimes more commercial than didactic. However, the success of a particular methodological practice necessarily depends on multiple contextual factors, starting with the learners and teachers themselves, so that another of the "seven 'scientific laws' of language-culture didactics" (Puren 078) is: "The more concrete it is, the less transferable it is"; in other words, the more uncertain the results to be expected from such practices when they are reproduced by others in other environments.

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[13] *Official Journal of the European Union*, https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2006:172:0001:0003:EN:PDF.

The didactic perspective I presented above can be precisely defined, among other things, as a mechanics of methodological abstraction similar to that which Huberman & Miles (1991) propose to operate in their discipline from the primary data provided by sociological observation. The abstraction process generates *models* by eliminating contextual variations. The only thing that can be applied in DLC, in fact, are neither practices nor theories, but "models" (Walliser, 1977 *in* Puren 014; Rorty. 1995 *in* Puren 015; Puren 2020) that set the principles of action, among which there is always a principle of uncertainty as to the modes of concrete implementation on the ground.

Some off-patent components of the vaccine

A first inoculation component - it will come as no surprise that I am starting with this one - is *a training in DLC epistemology*. Once injected, it generates as its main effects a permanent recursivity between the three constituent perspectives of the discipline and a critical watch against all forms of applicationism.

A second vaccine component is the so-called "*learner-centeredness*". Its requirement can be criticized when it is presented, as it was for decades in DLC, in the mode of an unrealistic exclusive injunction[14] . But when it is made to work "in the background", "in the background of the (teaching) task", also in a critical watch mode, it protects against the reduction of teaching modes by keeping present, in the teachers' minds, the uncertainty concerning the learning modes really implemented by each learner.

The term "differentiated pedagogy", which implies that it is the teachers who differentiate the teaching-learning process, is not used in northern European countries because it is considered that the teacher cannot know in real time what is appropriate for each of his or her students and that he or she could not, in any case, differentiate his or her teaching methods sufficiently to the point where they would be appropriate for all.

The French pedagogue André de Peretti, proposing an "Esquisse d'un fondement théorique de la pédagogie différenciée" (1985, p. 5), appeals to the "law of required variety" of William Ross Ashby, one of the founders of cybernetics, which states that a system can only effectively pilot another system if it possesses a degree of internal variety at least equal to that of this other system. Given the extreme diversity of cognitive profiles as well as learning habits and strategies of learners in group teaching, it is surprising that De Peretti did not question, despite this theoretical reference, the very idea of differentiated *pedagogy*, since teachers cannot have what he asks of them in his text, namely "a variety of pedagogical measures and methods that are sufficiently developed". His proposed measure of freeing teachers from any "standardized pedagogical framework that excludes or discourages diverse forms of approach or method" (11) is a necessary but not sufficient condition.

In northern European countries, the expression used for managing the heterogeneity of learners is *open learning, offenes lernen*. In other words, differentiation

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[14] In institutional group teaching, a teacher is necessarily led to focus at times on the group of learners, at other times on the institutional requirements or even on his or her own teaching, and all of these focuses may at times be in opposition to each other (cf. Puren 1995a).

is conceived as a differentiation of learning and not of teaching, with the learner being considered the only one who knows at all times what is appropriate for him or her and who can implement it. To this end, teachers organize sequences of autonomous learning alongside directive teaching sequences[15] .

The link between uncertainty, complexity and a variant of methodological eclecticism can be found in this passage from an article by Abe & Gremmo, two members of the CRAPEL in Nancy (Centre de Recherches et d'Applications Pédagogiques en Langues) which specialized, from the early 1970s, on the question of the autonomy of students in the LANSAD sector in university language centers.

> As we do not know what actually happens in the black box that is the human brain, it is difficult to know what information to give at the beginning to be sure that it results in a satisfactory *output*, and therefore *intake*. In fact, in a traditional course, the teacher proposes a method to promote this acquisition or *intake*. But if the learner has a different method than the one proposed, he will not be able to learn at all, or he will spend a considerable amount of time trying to understand and acquire the method proposed by the teacher.
>
> It may be possible to solve the problem by offering a wide variety of methods. The learner, by trial and error, is more likely to find the one that suits him. This is the system that is offered in self-study: not only are the methods varied, but so are the materials and the English-speaking [speakers]; only the advice is the fixed point of learning. Learners generally choose to work on several documents and several methods in parallel (1983: 113).

A third vaccine component is the project approach. It has been present since the beginning of CRAPEL, with a formula containing the same two basic elements: for the teacher, a teaching project aiming at the autonomy and responsibility of the learners; for the latter, their own learning project.

The project approach is nowadays widespread at all levels and in all areas of society: for example in scientific laboratories (cf. "research projects"), in companies and administrations, in secondary schools (cf. "school projects"), in pedagogy (cf. pedagogical projects"), for individuals (cf. "life projects" and "professional projects") and, beyond that, for any type of collective social action, from that of a group of neighbors (for an apéro project at the bottom of the building, for example) to that of an entire nation (cf. the notion of "society project"). So much so that Jean-François Boutinet was able to publish, in 1990, a book entitled *Anthropologie du projet*.

The fundamental reason for this universal diffusion of the project is that it is the mode of conducting action that is best adapted to complex environments, i.e. to contexts of uncertainty. To manage this complexity and the uncertainty it provokes, the project approach relies on a set of specific cognitive operations that all aim to anticipate, control, evaluate and, if necessary, rework each of the different tasks to be carried out, or even remove or add new ones (cf. Puren 2017a). The current actional perspective, because it aims at the formation of a social actor, has revived the type of project suitable for teaching-learning, namely the so-called "pedagogical

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[15] On the need, in good complex management logic, to conceive of differentiated pedagogy and autonomous learning as both opposing and complementary approaches, see Puren & Bertocchini (2001).

project". Insofar as the pedagogical project is a complex social action, it confronts learners collectively with methodological choices likely to lead them to mobilize the different disciplinary perspectives themselves (Puren 053, 2022).

In conclusion

Even more than before, if learners and their teacher work together to this end and act accordingly, the language classroom can function as a real "incubator" of transversal competences, among which the so-called "tolerance of uncertainty", with which language teaching-learning, as we have seen, confronts teachers and learners in particular. I can think of no better way of concluding than to take up the conclusion I proposed in an article entitled "The Epistemology of the didactics of languages and cultures, a complex epistemology for a complex discipline" (2019).

The necessary complexity of teaching-learning practices in the language classroom has strong similarities with that of professional life, so that the LANSAD language teacher, if he/she organizes his/her teaching and asks his/her learners to organize their learning accordingly, can claim to be a trainer in his/her own right, in the same way as a teacher of Management in a Business School, of Urban Design in a School of Architecture or of Product Design in a School of Graphic Design. Exactly twenty years ago, during a conference at a UPLEGESS Congress in 1998, I proposed that, for certain groups such as those involved in teaching languages for specific purposes, collective learning of a foreign language should be seen as a kind of "cultural gymnastics": the foreign language class is, in fact, a place and a time where teachers can accompany, guide and help learners to train, in an environment that is both demanding and benevolent, intensive and secure (as are the "business incubators"), in cultural components that are particularly solicited in the professional world, such as the taste for and the competence in collaborative work, the spirit of initiative mastery of information, openness to difference and novelty, creativity, collective debate, tolerance of uncertainty, mastery of different types and modes of evaluation, the ability to benefit from one's own mistakes and those of others, and, *last but not least*, the ability to manage complexity, in particular through a proactive attitude, a reflective approach and mastery of project management.

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