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Beyond Fragmentation:

DIDACTICS, LEARNING AND TEACHING IN EUROPE
Subject Didactics – An Academic Field Related to the Teacher Profession and Teacher Education

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1 Introduction

Subject didactics\(^1\) has a long tradition. Nevertheless, as an academic field, it is a newcomer. In order to understand this apparent paradox and to grasp the specific epistemological and institutional characteristics of the field, a historical outlook is particularly appropriate. Three main periods will be distinguished. On this basis a definition of subject didactics in a modern sense is given and two of it constitutive tensions are defined.

2 Subject didactics: The precursors

For any domain of education, precursors can be found in all societies since education is consubstantial to society. For didactics, this is also true, at least if one defines it as widely as Chevallard (2007) in his anthropological theory of didactics (ATD): “Didactics is the scientific study (and the knowledge resulting thereof) of the innumerable actions taken to cause (or impede) the diffusion of such and such a body of knowledge in such and such an institution” (p. 133). But even if one limits “didactics”, as is our point of view, to phenomena linked to the existence of specific social institutions having the function of systematic teaching and learning like, for instance, schools, one could go back to the installation of the division of manual and intellectual labour in history when such institutions first appeared. Didactics would then be con-

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\(^1\) We use this phrase in accordance with the editors of the present volume who speak about “subject specific didactics” or “subject didactics”. In using this phrase, we have a complex linguistic problem. In French – and I will refer to this academic culture mainly – “discipline” is used for academic and school disciplines without distinction; in German, this corresponds generally to the notions of “Fach” which is also used in both social domains. This allows to create the phrases “didactique des disciplines” or “didactique disciplinaire” on one hand, “Fachdidaktik” on the other. In English, we could probably use “discipline didactics” or “disciplinary didactics”. This linguistic economy creates connotation that makes it not easy to understand across languages; the more so as languages condense in a certain sense social practices that are different.
temporaneous to "politics" and "religion" as a means of social reproduction and of the negotiation of power relations.

Let us be more modest and consider the phenomenon of didactics when it was first expressed in an explicit theoretical form. Here again, one could go back, as Hopmann (2007) does, to Hugo of St. Victor who can be considered the first to have given a coherent general theory of all knowledge to be acquired. He systematically distinguished disciplines that organise this knowledge: "De ordine quae est in disciplinis" [The order which is in the disciplines] is the title of Chapter 2 of his sixth book.\(^2\) But in his theory, knowledge is ordered only from the point of view of knowledge itself, without taking the students' relationship to it into account. Besides this general theory of didactics, one can find theories about the practice of teaching in particular domains, among which, regarding the teaching of language, the most important is without doubt Quintilian (90/1972; for Quintilian as the “first” didactician, see Bahmer, 1994). But there is no general theory of didactics that simultaneously takes teaching, knowledge, and students learning into account.

3 The birth of didactics: Comenius

Such a theory appeared in the 17\(^{th}\) century when education became systematically linked to the idea that it has the aim to allow anybody to have access to any knowledge. Didactica is "the whole art of teaching all things to all men"\(^3\) Comenius says. Although this most democratic utopia is linked to a theological vision of the world, one can say that it is the foundation stone of all didactics. In order to be attained, this most general aim requires a most powerful theory of education, something which Comenius produces in his work. He discusses the theory of specific didactics\(^4\) in what can be considered a particularly highly developed theory of subject didactics, namely Novissima linguarum methodus, the newest method of languages. For Comenius, didactics is the theory of good teaching or, as he puts it: "fundamenta illa didactica non alia esse possunt, quam eorum omnium quae in docendi ac discendi actu interveniunt" (p. 154) [The basis of this didactics cannot be anything else than all that intervenes in teaching and learning.]. This didactics defines the general laws necessary to build a methodus that allows students to learn following the via regia of rapidity, pleasure and solidity. It gives the instruments for specific didactics, for instance the "didactica linguarum" (p. 231),

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3 See [http://core.roehampton.ac.uk/digital/froarc/comgre/part2/fly2.pdf](http://core.roehampton.ac.uk/digital/froarc/comgre/part2/fly2.pdf)
4 In English, there is a problem for speaking about didactics as a plural, since the word is a plurale tantum. Here, as in many cases, I use "didactics" in the sense of different (subject) didactics. Probably, the context will generally allow the reader to understand in which sense "didactics" is taken. And sometimes I will even use the singular form.
which is the object of his book. This is not to say that he was the first to build such a didactica linguarum: he gives a long list of predecessors of “aliorum didacticorum” (p. 145) [of other didacticians] who, in this first half of the seventeenth century, have contributed to language didactics: “fuerunt enim hoc semiseculo complures” [they were many in this half century]. Comenius’ specific contribution was to base his method on a didactic theory which explicitly theorises the object of didactics as a theory of three strongly interlinked aspects: “docere, discere, scire” (p. 158) – to teach, to learn, to know; the teacher, the learner, the knowledge. Scire, knowledge, is defined in a wide way (p. 159): all that is possible to create by intelligence, by tongue or by hand, i.e. to think, to speak, to make.

4 The birth of subject didactics in the 19th century: Disciplines and the teacher profession

It might now be possible to go on by describing the many methods that have been constructed in order to teach different subjects. But these methods are singular approaches constructed for specific social and institutional needs. A new step in the construction of subject didactics becomes necessary and possible in the context of the fundamental transformation of school during the 19th century which one could consider, following the first half of the 17th, as the second didactic century, as one of the birth of subject didactics. In our view it is characterised, among many others, by two factors that are the essential ingredients of subject didactics in the modern sense: disciplines and the teacher profession.

1. The 19th century can be described as one in which, under the heading of the (nation) state, a more or less unified school system was created; unified at least in the sense that every part of the system is linked in one way or another to all others. This has deep consequences. One of them is precisely the construction of the school system around “disciplines”. Disciplines, as shown by Stichweh (1993; also see for instance Bourdieu 2001; Favre 1985), can be described as social organisations aimed at producing and diffusing knowledge. Beginning at the end of the 18th century, disciplinarisation is a still ongoing process of redefining boarders between disciplines by specialisation, fusion and fission (Becher, 1989). The construction of a school system takes place parallel to academic disciplinarisation. This also models the school system which develops its own disciplinary system, linked in complex ways to the academic one.

Academic and school disciplines develop in a strong interaction. An immense process of the didactical transposition of knowledge (Chevallard, 1995) takes place, specific to all disciplines. It implies a deep transformation of knowledge following general laws described by Chevallard (1985). Two main factors heavily influence the way knowledge is prepared for teaching
and learning and thus the way it is deeply transformed. a) Knowledge has to be circumscribed and declared an object of teaching. This implies that a model of knowledge has to be created, or at least that it has to be explicated in written form, "scripturalised" as some authors say (Vincent, Lahren & Thin, 1994). Knowledge was "elemented", to use Lakanals term, during the French Revolution, and organised following a sequence or progression. b) The second factor that significantly influences didactic transposition is that knowledge no longer has the same sense since it is no more knowledge for use in practical situations, but knowledge to be taught and learned in situations that can sometimes imitate practical situations.

Didactic transposition is not a one-sided process going from scientific or expert knowledge to knowledge to be taught. a) The massive process of didactic transposition acts back into the academic domain occurs in domains like language education (see Chiss and Puech, 1997) or in history (Heimberg, 2008). b) The disciplinarisation process in linguistics, literature, history etc. constantly transforms the relationship between academic and school discipline, with the distance between them becoming more important. This process can already be observed in the natural sciences and even more in mathematics at the end of the 19th century. It led quite early to the need for an autonomous theorisation of school disciplines and for what can be considered the first external forms of subject didactics – external to the school system – by the foundation in 1899 of the journal L’enseignement mathématique by the Genevan university professor Henri Fehr and the creation of the International Commission on Mathematical Instruction (ICMI) in 1908 which selected the journal as its official organ.

Amidst ever changing conditions, the relationship between academic and school disciplines remains a constant problem that has always to be resolved; this being exactly the place of subject didactics.

2. The building of state school systems, at least in most European countries, initiates a process of the professionalisation of teachers, the already ongoing redefinition of the teacher profession. A profession is a highly intellectual activity; it is characterised by the fact that access to it is regulated by the state; that it is learned in a context where the contents are "professed", in other words, elaborated as discourses that allow one to transmit its essential contents; and that its members are organised in associations with professional congresses and publications through which they build their professional identity. The professionalisation of teachers plays a central role in the construction of subject didactics as much as inversely subject didactics are central to the professionalisation of teachers. In this dialectical relationship, two levels of the construction of subject didactics can be distinguished.

As we have seen, subject didactics are the result of the long lasting process of didactic transposition that takes place in every discipline. More concretely, it is the result of the daily interaction of millions of teachers in their corps à corps with students in a highly specialised institution, the school,
which has many finalities, themselves changing in history. These constructions have quite often been studied (Goodson 1993 in general; also see, for instance among many other studies: Chervel, 2006, for French as a first language; Lebeaume, 2000, for technology education in schools), although the point of view of the main actor, the teacher profession, is not at the centre of these studies. In this process, the passage between both forms of disciplines, academic and school, becomes more and more complex. On one hand, academic disciplines are evolving and becoming highly sophisticated, with the distance between the new knowledge produced, the knowledge to teach and the knowledge actually taught, as already said, becoming obviously more important. On the other hand, the school system itself is differentiating ever more, and this requires differentiation in the different subject didactics themselves, the student and his or her learning having to be taken into account in different contexts with different finalities. Nonetheless, the main – and most often only – reference discipline remains the academic one (Tenorth, 2009), at least for secondary teachers who are the main producers of subject didactics, even for the primary school.

Subject didactics as a practice, giving way to curricula, manuals and teaching discourses, are themselves theoretically reflected. There are two loci where the elaboration of these “theories of practice” takes place. The profession itself develops theoretical reflexion in its associations, congresses and publications, producing knowledge about the transmission of knowledge. These discourses of the profession on the knowledge have, as Tenorth (2006) shows, at least the following functions: to better and to transmit the profession’s own practice; to situate and to defend its discipline in the whole of the disciplines; and to define its contribution to the finalities of education, to Bildung as it is often called in German. Parallel to this and in a complex interaction with the profession, the institutions of teacher education – be they the French Ecoles normales or the German Lehrerseminare; be they the German “philologische Seminare”, or the Swiss German courses on didactics at university5 – have to construct explicit discourses about teaching in different disciplines. They have to transmit knowledge about the transmission of knowledge and in order to do this they have to model the transmission of knowledge itself. This precisely is what is pointed to when saying that subject didactics are “theories of practice”, of the practice of teaching a given discipline.

Subject didactics are thus born as practices and theories of practice, in the realm of a disciplinary school system, above all by its main actor, the teacher profession.

5 A historical analysis of more than 8000 courses and seminars in the domain of educational sciences at Swiss universities from 1890 to 1950 shows that more than 2000 of them were devoted to subject didactics and given to teachers of all school levels (Späni, in print).
5 Secondary disciplinarisation: Subject didactics as an academic field

Following Comenius’ method – his didactica linguarum – as a prehistory of subject didactics and following the 19th century construction of subject didactics as practices and theories of practice, one can distinguish a third form of subject didactics which redefines them in a complex way. The point of departure for this evolution is the fundamental reorganisation of European school systems in the 1960s, which can be briefly described as the “massification” of secondary schools aiming at democratisation and the higher qualification of the labour force (in the large literature, see for instance Criblez & Magnin, 2001, for Switzerland; and Prost, 1992, for France). This transformation has, among many others, two consequences:

1. a profound reform of curricula; and
2. a transformation of teacher education on all levels.

For subject didactics, these facts act together to transform them fundamentally.

Many authors assume that the curricula reforms of the 1960s are the starting point for most subject didactics as academic disciplines: “modern mathematics” (Margolin, 2005), the “communicative turn” in language teaching (Bronckart, 2005), and the “dominance of a humanistic model” in arts disciplines (Rickenmann and Mili, 2005). One could continue the list with history, geography or science where positivistic approaches are replaced by more constructivist ones. But it is not so much the reforms as such that are the motor of another development of subject didactics. The limits of the reforms, the discrepancies between the expectations and the results, perhaps even their failure, have imposed new forms of reflection on the conditions of teaching and of learning. This first motor of the transformation of subject didactics could be considered as the more “ideological” one, as the motivational force of didacticians themselves, as the subjective reflection of an objective process. This subjective reflection nonetheless has important effects on the contents of subject didactics insofar as they are necessarily developing in the function of curriculum reform.

The second motor changing subject didactics is the huge development of teacher education. This development – one aspect of the process of professionalisation of the teacher profession – mainly takes the form of the universitisation of teacher education, with the corollary of a rapprochement of the different teacher categories. This rapprochement – which is a general tendency taking many different forms following the countries, and with many ups and downs – reinforces the need for more developed professional education for secondary teachers and the need for academic disciplines combining research and teaching for primary teachers.

Both tendencies result in the development of subject didactics as an academic disciplinary field. This slow and still ongoing process can be de-
scribed, following Stichweh’s (1987) terminology, as secondary disciplinarisation (for this concept, see Hofstetter & Schneuwly, 2007). It means that a certain number of academic disciplines develop mainly in reference to an already existing professional field (contrary, for instance, to psychology where psychologists were the product of a discipline: secondary professionalisation). The questions and problems that structure the emerging disciplinary field are built in reference to social questions and to already existing professional knowledge. The emergence and development of subject didactics as a disciplinary field, partly due to the evolution of the professional field itself, transform the latter by the very fact that knowledge is exteriorised and interacts with another domain, a disciplinary field. A new and complex relationship appears that fundamentally transforms the forms of knowledge production in subject didactics.

6 Key tendencies in the process of disciplinarisation:
Towards a concept of subject didactics

Thus, in many European countries, one can observe a tendency of establishing subject didactics as autonomous fields of research, and even as disciplinary fields. During this period, subject didactics transform along three key tendencies that reinforce their autonomy.

1. The first key tendency is the progressive shift from and critic of “applicationism”, i.e. the more or less direct application of scientific theories in curricula and means for teaching (generative and transformational grammar and modern mathematics are representative examples). The appropriation and learning of knowledge is not analogous to the structure of knowledge described by the academic reference disciplines. The latter can legitimise knowledge to be learned and guarantee its epistemological validity. But the pertinence of knowledge, the reason for its choice and the way it is prepared for teaching and learning depend on factors that are essentially defined outside academic disciplines and imply analyses and studies that are proper to didactics as a disciplinary field.

2. This implies a second key tendency. Subject didactics do not rely any more almost exclusively on academic disciplines as was the case for a long time. The redefinition itself of the relationship to the academic reference discipline opens the way to take different human and social sciences into account, among them educational sciences, in line with a more empirical orientation.

3. Subject didactics, paradoxically, is also becoming more and more autonomous towards the domain they come from, namely school disciplines in a narrow sense. Research is conducted about preschool education where education aims to lead to the disciplines, but is not yet organised in disciplinary
forms; education in university is becoming the object of studies where teaching is done within the realm of academic disciplines; continuous education is also becoming a field of study. More generally, one can say that subject didactics define their object of research in an ever more general way as being the teaching and learning in domains of knowledge that are central to education on all levels, be they organised as (school) disciplines or not.

The complex and dynamic evolution of subject didactics along these key tendencies results in the emergence of autonomous disciplinary fields whose characteristics can be defined as follows.

- Subject didactics is organised as autonomous research or disciplinary fields that are necessarily pluridisciplinary.
- They aim at describing and explaining and at the same time developing in systematic, theoretical and empirical ways the conditions of teaching and of learning in different domains linked to education institutions.
- This means to relate and treat three strongly interrelated poles: the object of teaching and of learning: the knowledge – in the wide sense given by Comenius – that has to be taught and learned; the students, their learning activities and their developmental process; the teachers, formed by the profession and its “sedimented” practices.

7 Tensions in the disciplinary field of subject didactics

The evolution of subject didactics produces tensions, two of which seem to be particularly important.

The first tension is institutional and defines subject didactics from the outside, through its conditions of existence. In a certain sense one could ask: to whom do subject didactics belong? Since there is no clear response to this question, one can speak of a “Dauerkrise” (Hopmann, 1999), a lasting crisis of subject didactics. Indeed, when subject didactics is conceived of as belonging to the academic reference discipline, strong tendencies generally appear going in the direction that didactics consists simply in the transformation of scientific knowledge into knowledge to be taught. The mastery of scientific contents is itself considered sufficient to guarantee teaching, with some minimal adaptations. Subject didactics becomes an appendix of the reference discipline. To put it more concretely: subject didactics is not considered a highly specialised field of research that needs special training and proper methods. Anybody who masters the domain of knowledge is able to teach didactics. This tendency, on a very general, national level, can be observed in the disappearance of specialised teacher education institutions in France, mainly for secondary teachers: mastery of the academic discipline plus some general pedagogical principles and practice are sufficient for training teachers.
Inversely, so to speak, and more oriented towards primary teachers, didactic questions linked to disciplinary knowledge can disappear in favour of general considerations of teaching and learning. The question of the specificity of teaching in relationship to disciplinary contents is only treated from the point of view of teaching methods: how to teach this particular content to this specific group of students. It seems unnecessary to have a specialised field of study to treat this question. Institutionally speaking, this often leads to a division with general didactics on one hand and what is called methodology on the other. Subject didactics as a specialised domain of research in respect to the conditions of teaching and learning in a circumscribed domain of knowledge is disappearing.

It is significant that this tension is situated on dividing line between two parts of the teacher profession. Long lasting traditions of teacher education and their relationship to knowledge and discipline are behind them. The constitutive tension of subject didactics is but one form of expression of this much deeper contradiction in the school system and its actors themselves.

One could define an ideal institutional concept that could ease the tension or that could give the tension an institutional form and contribute to controlling it institutionally. The institutional places where subject didactics can develop in ideal conditions seem to be fundamentally plural:

- They have to be situated at the same time where the academic reference disciplines and where educational sciences are.
- They have to be concerned with all levels of education, from preschool to higher education.
- They have to be articulated to institutions of teacher education that can be constructed as transversal institutions in universities.

The second tension characterises subject didactics as an inner, constitutive principle. One can describe didactics as situated on an axis with two poles. On one side, subject didactics are conceived of as a field describing and explaining the conditions of teaching and learning in a given domain. This conception is particularly strong in French mathematics didactics where there is a clear rupture with innovation as a constituting principle of didactics. To use the words of Margolin (2005) “The originality of the French paradigm of mathematics didactics is to take very seriously fundamental research, and not to seek direct success with students. The aim is to determine the conditions that theoretically can develop the knowledge of students, and not only factually to better teaching”(p. 344). Didactic engineering for instance is not understood first as a means of the transformation of teaching practice, but as a basis for the experimental study of the conditions of teaching and learning. One could call this pole descriptive and explicative subject didactics.

On the other side, there are conceptions of subject didactics where the development of new models of teaching is at the centre of the study. The aim is above all transformation, intervention, norm guided by theory and empirical
research. Innovation is the driving force of research. One could call this interventionist subject didactics.

This second conception is largely dominant if one looks at publications in subject didactics. It nevertheless seems possible to put forward the thesis that subject didactics will firmly develop only on the condition that it is grounded on both poles or, to use a more coherent metaphor, if it progresses on two feet. The development of fundamental, descriptive and explicative research on the general conditions of teaching and learning, i.e. of the constraints and possibilities inherent to the didactic structure, strongly historically determined and specific to the different disciplines, is necessary to fight against the illusion of permanent innovation that has become the dominant paradigm of educational sciences, in the inheritance of progressive education or *education nouvelle*.

Interestingly enough, fundamental research in subject didactics necessarily leads back to its roots, namely to subject didactics as a historically constituted practice and theory of practice. Take one example: as we have shown (Schneuwly & Dolz, 2009), teaching argumentative texts today can be described as a professional practice that is deeply characterised by the fact that it is “sedimented”, i.e. that practices from different historical strata appear in every lesson of every teacher. Take the following small example that illustrates this contention. At the end of 11 lessons on a particular genre of argumentative texts, the “point of view”, a teacher offers the students a synthesis. She refers first to the particular genre, she calls “*point de vue*” (point of view), referring by this act to the theory of genres which is the theoretical basis of the teaching materiel she uses, a quite modern stratum of didactic theory and practice:

![](ens.png)

Describing the means the students “have in hand” to write, the teacher refers, among others, to another stratum of didactic theory developed mainly in the second half of the 19th century: the text is conceived of as a representation of thinking with a heavy load on argumentative schema and connectors:

les arguments s’organisaient non seulement avec des connecteurs [...] qui normalement n’ont plus de secrets pour vous qu’on a [...] et surtout par ce que j’appellerais agencement des arguments c’est ce qu’on a appelé la schématisation [arguments organise themselves not only with connectors which normally don’t have any secrets anymore for you, but above all by what I would call the layout of argument, what we have called schematisation].

She also refers — without knowing it of course, but almost quoting it — to ancient rhetoric:
you have understood that to write a good argumentative text you have to introduce examples and we have also seen and talked about arguments by authority [TO8, 13/03/03, 11'20''].

This could have been said by Quintilian:

"Tertium genus ex iis quae extrinsecus adducuntur in causam Graeci vocant παρα-
διγμα [the third kind of proof, which is drawn into the service of the case from
without, is called example by the Greeks], [...] adhibebitur extrinsecus in causam et aucto-
ritas [Authority may also be drawn from external sources to support a case]" (Quintilianus, 90/1972, pp. 597, 613).

Empirical research on subject didactics necessarily leads us back to the 19th century practitioners, and to Comenius and Quintilian. And so the loop is completed.

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