Chapter 5
The Rise, Evolution, and Future of Didactics in Italy: Branching Out Towards New Research Horizons

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Introduction

This chapter aims to outline the historical progression and current status of Didactics in Italy and share the profound reflections, often available only in Italian, that have characterized the process of distinguishing itself as an autonomous research field. In addition to identifying the differences and similarities with other European countries in terms of its fragmentation between general didactics and subject-specific didactics, it illustrates how, over recent years, it has expanded its boundaries to embrace other fields of research such as cognitive neurosciences. Hence, it contributes to the mapping of European research related to Didactics and how Italy addresses the societal challenges that didactic research faces in a changing world.

Italy is a country with a longstanding history in educational research, boasting pedagogists of international acclaim (Cambi, 2003; Trisciuzzi et al., 2002; Crispiani, 2016). It pioneers a system where all students irrespective of their ability are taught in mainstream schools (D'Alessio, 2011; Mittler, 2000; Aiello & Pace, 2020). It treasures a rich body of pedagogical reflections that has kindled reciprocal influence especially with western European countries such as France and Germany, possibly due to their traditional philosophical approach to education (Mantegazza, 1998; Caillot, 2007; Ligozat & Almqvist, 2018). In recent years, it has also embraced the acknowledgment that "what teachers know, do and care about" (Hattie, 2003, p. 2) is key to student achievement along with other educational priorities (World Bank, 2015; OECD, 2019; UNESCO, 2016).

The influence of the European economic and geopolitical scenario cannot be overstated. From the beginning of the twentieth Century, industrialization, the settlement and expansion of cities, the fight against illiteracy, and the central role

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attributed to the school as a mass producer of knowledge and skills (Schneuwly & Hofstetter, 2020), to which were conferred new tasks and responsibilities, are only some examples. This backdrop led pedagogical debate to reach its height internationally, including Italy. Convergence of thought in relation to the philosophical underpinnings of education, similarities in school practices and the evolution of Didactics as a discipline can be identified among the works of prominent pedagogists as well as policy documents in Europe and beyond. Amid these conceptual and practical transformations, worth highlighting is the gradual detachment of Didactics from Pedagogy and its extension to other fields of research driven by the need to respond to the additional pressures emerging from this complex interplay of cultural, historical, economic, and political factors (Burns & Köster, 2016) characterizing even Italian educational contexts (D'Alessio, 2011) mainly in the second half of the twentieth Century.

As other European Union, UN, UNESCO and OECD member states, Italy has endorsed an array of world policy documents with goals to be reached in future years (e.g., EP, 2000; UN, 1989; UNESCO, 1990; OECD, 2005) which led to various reforms. Two Laws, issued 20 years apart, are just two of the examples of why Didactics has grown into a broad field of research. The first reform, which may be said to have paved the way is Law n.118/1971 that abolished all special schools. As a result, teachers were suddenly faced with extremely heterogenous classrooms, yet very little preparation to deal with this new scenario. Indeed, as outlined by Zanniello (2016), due to the socio-political pressure placed on universities, who immediately took the urgency on board, studies on teaching methods that promoted learning among students with disabilities started to flourish. In addition, a subsequent law in the late 70's delegated teachers full responsibility for curriculum design and lesson planning. In this context, didacticians had to address these needs.

Driven by such urgencies, the concomitant worldwide developments on teacher competency profiling, and the central role of the teacher to guarantee quality education for all, Law n. 341of 1990 reformed the qualification requirements for prospective teachers. These were raised to bachelor's degree level for primary school teachers (since 2010 it has become a master's degree), and post graduate teacher education courses were established to equip prospective secondary school teachers with the pedagogical content knowledge required. In addition, in-service teachers were encouraged to seek further specialization by following courses offered by Higher Education Institutions, often subsidized by the Ministry of Education. As in French-speaking countries, this scenario contributed to highlight the importance of "an extensive analysis of classroom transactions in order to grasp the content taught and the dynamics of teaching and learning process as a joint-action" (Ligozat et al., 2015, p. 314, italics in original). Furthermore, it led to another strong impetus to research in Didactics (Zanniello, 2016).

Similarly to the evolution of Didactics in other European countries (Caillot, 2007; Meyer, 2012; Meyer & Rakhkochkine, 2018; Chevallard, 2007), in parallel to its fight for recognition as a separate field of research with its own ontology and epistemology, Didactics in Italy underwent a subsequent initial bifurcation between domain-specific Didactics (or subject Didactics) and general Didactics (Damiano,

1996; Frabboni, 2000; Rossi, 2011; Zollo, 2017). Indeed, there has been, and still exists, a hegemonic struggle for the demarcation of boundaries between the two. Traditionally, the latter is a discipline within the Faculties of Education, it stems from Educational Sciences and its proponents have an educational/pedagogical academic background. The former is linked to the respective faculties, depending on the disciplines. Subject Didactics hardly takes educational implications into account and scholars whose professional specialization is in the discipline concerned (mathematics, biology etc.), find difficulty in acknowledging studies in general Didactics because they are used to experimental research designs (D'Amore & Fandiño Pinilla, 2007).

For the generalists, their discipline is a science which can identify autonomously the most suitable strategies, methodology and tools to ensure that all students acquire indispensable competencies to approach any subject matter (Nigris, 2012). On the opposing pole, the promoters of domain-specific didactics claim that it is sufficient to know the discipline to be able to teach the related contents. On acknowledging the wide spectrum of competencies teachers require to work in today's classrooms, there have been efforts in bridging these two sub-disciplines (Frabboni, 2000; D'Amore & Fandiño Pinilla, 2007; Nigris, 2012). Evidence of this may be the teacher education course programs in which both are given due importance. In fact, comparing the Italian reality with the data Meyer (2012) presents regarding other European countries, the local situation seems to bear similarities with Finland, Germany, and Eastern and Southern parts of Europe where both the sub-disciplines are present in university course programs. However, the discrepancy between general Didactics and subject Didactics is not as significant in Italy as it is in Germany. For example, whereas general Didactics is envisaged in all programs, domain-specific Didactics is given mainly more prominence for preparation courses targeting secondary school teachers. Further to this bifurcation, other sub-disciplines have made their way and have become fundamental compulsory components of teacher education courses such as the introduction of the study units 'special Didactics' and 'inclusive Didactics'. By virtue of the worldwide impetus promoting inclusive education systems and the succession of reforms in Italian educational policy since the aforementioned 1971 Law (Zanniello, 2016), studies in this area have flourished and competency acquisition inherent to the implementation of inclusive teaching practices, irrespective of the subject and grade taught, is steadily becoming a must in all course programs (Aiello, 2015, 2019). Other examples of branches within the realm of Italian Didactics comprise intercultural Didactics and media and technology education (although the title does not include the word 'didactics', it is still considered one of its subdisciplines).

Notwithstanding the constant debate among these new strands in Italy and beyond, by now, there is common agreement on the fact that "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 a situation" (Chevallard, 2007, p. 133). In other words, a systems perspective which values the interplay among the student, the teacher, the subject matter, and the surrounding environment (Meyer, 2012; Hudson & Meyer, 2011). Indeed,

among its aims, research in didactics in Italy is now called to address issues regarding the identification of the right combination of professional competencies (Shulman, 1987) that teachers require. It looks into the most suitable and feasible teaching practices that can be adopted in schools, based on empirical research. It attempts to provide solutions to manage exceptionally heterogeneous classrooms, devise practical ways to use technology and other media effectively, and suggest techniques to improve collaboration among professionals and communication with parents and other stakeholders. It studies the potential of a wide spectrum of teaching methods and resources aimed to ensure that all students, irrespective of their differences, reach their maximum potential.

Thus, Didactics in Italy has gone through a complete metamorphosis since the twentieth Century. A young yet robust discipline, it has been steadily gaining ground as the science that can respond to the challenges of twenty-first Century schools. Taking into account the lack of a universal semantic interpretation of the term 'didactics' within the Western cultural tradition (Meyer, 2012; Hudson, 2007) and that literature in English on Italian Didactics is relatively scant, raises the need to delineate the key milestones of the historic developments in the field. The final section of this chapter describes the new paths currently being pursued in the search of innovative approaches to improve school effectiveness.

Tracing the Roots and Evolution of Didactics

Research on the etymology of the word 'didactics' leads us to the Greek verb didáskō that means 'to teach', 'to show'. Originally, it indicated the literary genre of didactic poetry, whose ultimate goal was to impart a form of teaching or to pass on knowledge through discussions on scientific, technical, moral, and theological themes (Zollo, 2017). This understanding of didactics, already connected to schooling albeit with slight semantic variations, continued to prevail not only in the Hellenistic and Roman eras, but also in medieval periods and up to modern times. Nevertheless, there is common agreement in literature, including Italian sources, that the birth of Didactics as we know it today is to be attributed to Comenius in the seventeenth Century (Schneuwly, 2011; Gennari, 2006; Meyer & Rakhkochkine, 2018) and whose definition outlines its object of study: the interrelationship among the teacher, the learner and all that emerges during the act of teaching.

Nevertheless, it was not until the twentieth Century that Didactics started to establish itself as a scientific discipline to the extent that the 1900s are referred to as 'the Century of Didactics' (Laneve, 2011). In his historical analysis of the evolution of Didactics in Italy, Frabboni (2000) divides these one hundred years, defined as the 'Century of the child, women, the masses and technique' (Cambi, 2003), into two seasons: the first sixty years were plagued by bad weather, whereas the last forty were illuminated by warm rays of sunshine. Initially, Didactics was merely considered to be a branch of Pedagogy that was responsible for the practical aspects, and which had no theoretical foundations to be self-legitimized epistemologically

(Frabboni, 2000). Therefore, it was conceived as the operational aspect which transformed the pedagogical principles developed at the time into the act of teaching. Similarly, in French-speaking countries (Caillot, 2007) as well as Germany (Meyer, 2012), in this same period, the relationship between these two disciplines revolved around the distinction between theory and its application: Pedagogy focused on the reflection on praxis whereas Didactics translated this reflection into action.

In addition, however, Damiano (2013) identifies a third category constituted by the practitioners who were the direct actors in education. As a consequence of this tripartite division, in Damiano's (2013) view, a 'hierarchy of irresponsibility' (p. 284, authors' translation) took place. On the one hand there were the pedagogists who were vested with a prestigious role, but futile since they were not directly involved in the action. The second group were the didacticians who worked on the teaching techniques without reaching any conclusions regarding their aims and efficacy. Lastly, there were the practitioners, who concretely implemented all that was imparted from the two higher levels without having a clear understanding of the aims and tools being used. The structure and division within this pedagogical pyramid, where on top the pedagogists reigned while at the bottom lay the teachers and educators, placed those engaged in Didactics in an intermediary position. The former regarded this research branch as 'blind technology' because it lacked theory, whereas the latter did not consider it as a reliable source. Such a system weakened the three levels significantly because they were not linked in a reticular manner.

As outlined in the first section of this chapter, the situation that Frabboni (2000) defines as the second season, starting from the 1960s, was very positive. In Italy, conforming to the reflections put forth in European literature (Debesse, 1976; Mialaret, 1976), the monistic view held until that time regarding Pedagogy was critically revised. As a consequence, the process towards a scientific foundation and epistemological legitimization gradually gave this field an autonomous position constituting the research area of Educational Sciences. Hence, Didactics started to be considered a science which, in its integrated synthesis of theory and practice, encapsulates the knowledge, lexis, strategies and procedures required to reflect, interpret, choose and, consequently, act on the basis of the needs that emerge throughout the teaching-learning process (Sibilio, 2014).

Towards a Shared Definition of Didactics in the Italian Context

Although characterized by an array of interpretations and uses, the concept of Didactics has undertaken a central position in the Italian educational panorama. Its delay to acquire its right to citizenship in the *cité scientifique* [scientific society], according to Laneve (2011), was two-fold: firstly, there may have been a misinterpretation of the neoidealist paradigm which considers knowledge as the ability to teach, therefore neglecting all those issues concerning the teaching-learning

process. Secondly, he adds, it may have been due to the tendency to interpret Didactics as mere practical knowledge within the realm of Pedagogy. In reviewing the literature of the last two decades on the theoretical reflections regarding the definition and realm of Didactics, what clearly emerges is the resolute position that it is to be regarded as a separate science within the field of education. Notwithstanding this affirmation, the interpretations regarding its area of interest and boundaries with other disciplines, especially Pedagogy, are still central in the Italian scientific debate as much as in other countries.

For example, Frabboni (2000) perceives Didactics as a science of formative/educational communication that has the role of transferring essential multiple forms of knowledge and models of social life that are ideally characterized by an ethical and solidary approach. The 'broadcasters' identified are all the formal, informal and non-formal educational and cultural agencies, while the 'receivers' are people of all ages – from childhood to late adulthood. The role of this type of communication is that of mediating between the receivers' nature and the culture of their immediate physical and social setting. This non-prescriptive and flexible definition of Didactics is based on the principle of plurilateralism and problematization. Armed with its own theoretical, epistemological, and methodological foundations, Didactics is open to flexibility, modularity, and the integration of theory and methods. This new discipline inaugurates a democratic, non-discriminatory educational model whose aim is that of orienting the teaching-learning process (D'Amore & Frabboni, 2005).

Baldacci (2004) views Didactics from a completely different standpoint, considering the school as the only institution able to address the individuals' education and training needs. Hence, he defines Didactics as the science of teaching: that educational activity which mainly deals with the cognitive aspects of education. In this regard, he proposes the formula Didactics (x, y, z) where the variables x, y and z indicate the discipline, the receiver, and the context. In Baldacci's (2004) view, Didactics should not attempt to determine these variables. Rather, it should try to develop a discourse on teaching that is placed on a more abstract level and, thus, on valid assumptions that can form the basis regardless of what is taught, to whom and where this route leads in order to study the relationship between teaching and learning (Baldacci, 2004). Of significance are the reflections and the decisions made regarding the objectives to reach, the goals towards which to aim and the frameworks of meaning in which these objectives and goals lie. As a result, Didactics is to be understood as that discipline apt to devise adequate responses to the challenges of society that are influenced by context and time.

Gennari's (2006) definition of Didactics, on the other hand, focuses on its scientific identity, raising its status to a discipline that is simultaneously overarching and underpinning. He posits that Didactics, besides being an institutive part of Educational Sciences, also concerns all human sciences and a conspicuous part of natural sciences. Hence, in his view, Didactics is a general science of teaching and learning: a science, because it encompasses the systematic study of the structure and behavior of its object of interest, in this case the teaching-learning process; general, because it comprises and controls the set of models and contents, theories and practices and develops its own interpretations on the actions when education takes place.

In agreement with this definition and to further emphasize the scientific status of Didactics, Cerri (2007) claims that Didactics is a complex interplay of theoretical and practical knowledge which, although autonomous, is intricately intertwined with Pedagogy. Didactics, in Cerri's (2007) view, is endowed with clear planning, methodological, assessment and evaluation processes whose critical approach and awareness guide educational action through a cyclical and transformative process where reflection and action influence one another. Within this definition, Didactics is considered as critical knowledge that links experience to culture and vice versa. As regards the relationship between Didactics and Pedagogy, Cerri postulates that the former is independent from the latter, but at the same time correlated with one another in a circular manner. In the same year, Calvani (2007) defines Didactics as one of the most relevant communication activities whose aim is to reproduce social knowledge that is transferred from experts to novices within intentionally created institutions. Although it can be considered as a succinct definition, it may also be viewed as a reductionist approach because it restricts the studies on the teaching-learning process to formal education contexts and neglects the conquests which the discipline has made in education arenas that go beyond the school. This is definitely not the case since professionals specialized in the field have attracted the attention of local entities, cultural associations, businesses, and publishers, expanding the boundaries to include informal and nonformal settings (Bonaiuti et al., 2016). Thus, studies in Didactics span throughout all lifelong education processes.

In the attempt to reach a possible shared definition and to delineate the boundaries of this discipline from an Italian perspective, Laneve (2011) and Rossi's (2011) reflections provide a theoretical and practical synthesis for those engaged in Didactics (scholars, researchers, teachers, educators and practitioners). According to Laneve (2011), Didactics is "composite knowledge with its own investigative autonomy" (p. 19, authors' translation) that is made up of three distinct elements:

– an object - that is teaching: the teacher's actions aim at learning, but these actions don't necessarily determine it.
– a field - that is not only represented by the school, but can also be other formal, informal and non-formal contexts.
– a research methodology - that relies upon quali-quantitative methods and tools which can vary from experimental design to action-research, from surveys to ethnographic accounts, and from participatory observation to the analysis of teaching practices.

This should be done while being constantly aware that (Rossi, 2011):

– there exists a strong relationship between theory and practice, and therefore action should be associated to systematic ongoing reflection.
– in order to teach, strategies have to be designed on the basis of the context, students' needs and interests. Hence, a professional approach must be adopted – common sense, naïve theory, and the adoption of strategies with no theoretical foundations are of little or no use.

– subject content knowledge is not sufficient to teach. The teacher needs to be able to transpose the subject content according to the context one finds himself or herself in.
– the teacher, as a professional, needs to plan and be responsible for his or her own lifelong learning.

Therefore, what has become central to the teaching profession and of equal importance are the teachers' ways of knowing, doing and their work ethic or beliefs (Hattie, 2003; Sharma & Pace, 2019). Rivoltella and Rossi (2012) affirm that there have been major developments in Italian research in Didactics, as in other countries, on the teachers' pedagogical identity (Altet & Vinatier, 2008; Shulman, 1987) and the teacher as a reflective practitioner (Schön, 1983; Hudson, 2002). This is evidence of the importance being given to the central role of the teacher in the inextricably linked teaching-learning process. There has been a shift from a constructivist to a post-constructivist view of teaching and learning, ascribing to action the place where the trajectories of these two processes intertwine and communicate with one another in the form of a recursive dialogue among the teacher, the student, and the context (Rossi, 2011). In this sense, Didactics refers to a panoply of theoretical knowledge that encompasses procedures, actions, and theoretical awareness and which generates a dialectic continuum between theory and praxis.

Branching Out: The Present and Future of Didactics in Italy

In the endeavor to provide a holistic understanding of the complexity within the teaching-learning process, researchers in Didactics have recently started to explore new avenues by reaching out to other fields of research. Indeed, the research advances in cognitive neurosciences and its progressive recognition as a robust paradigm to understand human behavior have not gone unnoticed (Rivoltella, 2018). In the 1980s, the French proposal of biopedagogy (Debesse & Mialaret, 1967/1978) had called the attention of the Italian pedagogist, Elisa Frauenfelder, who started exploring the possible relationship between pedagogy and biology (Frauenfelder, 1986). In the early 2000s, Frauenfelder & Santoianni (2002) coined the term 'bio-educational sciences'. This research branch is intended as a field of studies which interconnects conventionally distant fields of research spanning from pedagogy, psychology, philosophy, biology, and neuroscience. Starting from the concept of the potential of 'educability', intended as the study of the constraints and possibilities readily available in nature to overcome the nature-culture dualism, Frauenfelder's main aim was to understand whether it is at all possible to 'activate' an educational process in any individual. Inspired by this orientation towards the natural sciences, another three proposed paths have become the research frameworks of reference for theoretical reflection and initial empirical research. These paths are:

– enactive didactics, which brings together constructivism and embodied cognitive science.

– neurodidactics, which intertwines biological and social psychology, educational sciences, neuroscience, and didactics and proposes new teaching methods on the basis of brain function.
– simplex didactics, which is based on Berthoz's theory of simplexity and the properties and principles governing action within any Complex Adaptive System (Berthoz, 2012; Sibilio, 2014; Di Tore et al., 2020; Aiello et al., 2021).

Each of the four research branches bears its own characteristics. Yet, there are some common threads joining them together. First, they all view the education system as a complex socially-constructed phenomenon that constantly needs to recreate itself to adapt to time and context. Secondly, they are all rooted within an ecological perspective where the interaction among the teacher, the student and the environment is central to understanding the efficacy and effectiveness of the act of teaching. Thirdly, they aim at guiding teachers to reflect on their actions to bring about transformation within inclusive educational contexts. Nevertheless, their aims and approaches differ. For example, the former two research strands have led to the design of two teaching methods. Based on an enactivist approach, the PROPIT model (Planning for personalized instruction and inclusion using technology) (Rossi, 2014) proposes the construction of digital artefacts to create personalized learning experiences that are apt to engage all students. This was stimulated by the promotion of the use of technology in the classroom, the quest to find feasible strategies to promote inclusive practices and envisioning the teacher as a project planner on a microlevel. The 'Episodes of Situated Learning' (Rivoltella, 2015) is a teaching method aimed at guiding the planning of meaningful learning experiences to stimulate self-directed learning. Both methods have been widely adopted in primary and secondary schools in various Italian regions. Initial results, although qualitative, are very promising in terms of guiding teachers in designing effective lessons that are highly participatory, and helping students acquire problem solving skills through learning by doing. In addition, both methods stimulate reflection in action and upon action among teachers and students (Rossi & Giaconi, 2016).

Sibilio's (2014, 2015, 2017) conceptual framework on Simplex Didactics proposes a theoretical reflection on teacher agency. The aim is to create awareness about the simple rules that govern the sequence of actions taking place during the teaching-learning processes (Sibilio, 2014; Aiello et al., 2016, 2021; Zollo, 2018) and the implications these have on students' learning (Sibilio, 2017; Di Tore et al., 2020). The underpinning idea of this framework is that in gaining cognizance of their innate resources and capabilities (Aiello et al., 2021), teachers may feel better prepared and more efficacious in dealing with the complexities they are faced with in their day-to-day encounters with their students and the surrounding environment. Indeed, exploratory research carried out during a continuous professional development course has shown that training on simplex didactics may offer the possibility to bridge pedagogical content knowledge and subject content knowledge although the need for more training emerged (Zollo, 2018). These theoretical foundations aimed at disentangling the complexity in the didactic transposition, have led to other

studies in the area of technology in education (Di Tore, 2016, 2018), empathy and perspective taking abilities (Di Tore et al., 2020), among others.

Despite the fact that research on these propositions is still in its initial phases, these frameworks are gradually proving to be invaluable in orienting educational research, policy, and practice. They are increasingly informing curriculum design by providing scientific grounds for the choice of specific teaching methods to suit different learning needs and styles. They are stimulating further research to provide the much-needed evidence base that Italian research seems to lack (Cottini & Morganti, 2015). More particularly, they are accentuating the significant role of the teacher within the triadic interaction (teacher, student, environment), underlining the urgency for restructuring teacher education course programming and delivery. In summary, the attention is being shifted from the provision of pedagogical knowledge and the specialization in content areas to the idea that teachers are to be reflective practitioners, lifelong learners, and researchers.

In conclusion, one can claim that Italian Didactics has come a long way over the past fifty years. It is now a widely acknowledged discipline whose signature strength is its ability to adapt itself "to the changing nature of its object of study" (Chevallard, 2007, p. 131; Sibilio, 2015) and whose focus continues to gradually shift to "causal explanations that are not linear and not reductionist" (Cochran-Smith et al., 2014, p. 19). It aims to explore the processes that take place within this complex adaptive system where a unique and unrepeatable combination of different processes inevitably interact, producing an authentic teaching-learning event whose emergent result is an experience that brings about change in the teacher, the student, and the environment (Hudson, 2002, 2007; Sibilio, 2014). Studies are theory-driven and are based on evidence, in line with the recent trends in educational research on an international level that are increasingly guiding policy and practice (Slavin, 2019). In summary, didacticians are responding effectively to Rivoltella's (2018) claim that this field:

> can no longer be the space in which concepts are not univocally defined and phenomena are interpreted in such a way where anyone can sustain any opinion. If Didactics is to be thought of as a science, then the assumptions and claims made need to be falsifiable – and this cannot happen if they cannot somehow lead back to experimental evidence (authors' translation, p. 2).

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