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Beginnings

Our past is always constructed in our present. The events we have lived many years ago come to our memories with a significance that partly fits our lives today. The *madeleine* Marcel Proust tasted with his tea in a Parisian café did not simply bring back the bygone world of his holiday at his grandmother's provincial home but also created a new perspective *hic et nunc* that fitted his current state of mind. And while the events described in *À la Recherche du Temps Perdu* are quite anodyne, we are captivated by Proust's regeneration of these events.

We, the authors of this book, both now live far from the places where we were born. We are both specialists in the study of a special form of talk in education – in argumentation and learning. This might seem a very narrow kind of specialisation, and indeed, the number of scientists who focus on this topic is very small. However, scientists in the learning sciences talk a lot about argumentation. It may even be said that the term 'argumentation' is overused. It sometimes means discussion, or debate, dispute, or simply talking together whilst exploring reasons for or against an issue. One of the themes of this book is that types of talk have distinctive learning outcomes and that what we call *argumentation dialogue* is a very specific kind of talk with potentially considerable learning outcomes.

This is our present state of mind. It does not come from nowhere. It certainly comes from the general *Zeitgeist* that envisions education through dialogue, far from authoritarian teaching. It also comes from the teachers we met and who shaped our aspirations. But it also comes from our past experiences, and since we are both interested in forms of talk, our memories regenerate bygone events of our youth with the significance we give them today. We thought that before beginning this book, we could tell

a bit of our past histories, particularly in relation to dialogical and argumentative practices or indeed their absence.

I (BBS) was born in Paris. Among my first memories as a young child was the fur craft workshop that my father ran and that partly served as our home. Many Jewish immigrants from Eastern Europe organised themselves in groups of co-workers in workshops after World War II. Unending discussions took place in the workshop. I heard them discussing, haranguing, or bickering in their broken French, Yiddish or Hungarian whilst hammering leathers on large wooden boards. The topic of their discussions was often politics, as post-war difficult times drew together communists and anti-soviets. Although I did not understand most of what was said, I felt that the discussions were not only about politics. Somehow, they were not 'about' anything in particular but were rather a way for these men to articulate themselves in a place where they still felt like strangers. The tone was mostly passionate and often adversarial, but the workers seemed to like it. I also felt that the prosody of the discussions was different from what I heard outside. At that time, I attended an *école laïque*, a typical state school with republican values. There we learned to recite, to present, to be clear and precise, and also to avoid emotional turns of phrase.

The maternal side of my family was Algerian. My uncle was a rabbi who emigrated in 1962 after he flew from Algeria to France when independence was proclaimed. He taught me the basics of the Hebrew language and of biblical exegesis. I remember him incessantly asking me about the meaning of verses. The invariable reaction to my interpretations was a challenge to them or even a rejection. Since I was methodical, I tried to remember the interpretations he suggested, but when asked about the same verse a year later, the restitution of his own interpretations did not satisfy him. And his (auto)objections seemed to me quite reasonable. My learning experiences with my uncle were very different from those I had in school. The difference did not concern only form but also the epistemological. I experienced with my uncle the interpretation of texts as a divergent and infinite quest, whilst at school it was clearly convergent and finite. Very early on, at school, I learned to develop ideas in a thesis-antithesis-synthesis pattern. And I liked it very much. And I also liked to translate texts from Latin and Greek, believing at that time that understanding a difficult text was a matter of using voluminous dictionaries well. To the contrary, I felt quite irritated by Hebrew exegesis, according to which what seemed to me to have been accepted was always called into question.

I preferred what I grasped then as the sincerity and method of my experiences at school to my encounter with Jewish texts.

My clear preference for the methods of thought that I learned at school put me often in curious situations at home. I remember an anecdote that struck me when I was an adolescent. I began being interested in mathematics and enthusiastically engaged in solving difficult mathematical problems. My mother – a real Jewish mother, who must be aware of all that her children are doing – asked me one day: 'My son, could you tell me what a polynomial is?' I opened my mouth to answer in the way I had learned at school, giving a clear definition, but I suddenly realised that such a formal answer was senseless for her. I remained speechless and bashful. She had been a seamstress for years in the workshop my father ran, and like many immigrants, she had worked very hard to give her children the opportunities to 'succeed in life' in a way that had not been available to her. I felt guilty that I was … unable to tell her anything about the ideas I manipulated daily, whose reality seemed to me evident. I was unable to share with her my excitement about something I did intensively.

I began my university studies in mathematics. When I entered the *École Normale Supérieure*, I used books such as the *Bourbaki* series that gave the illusion of beginning from scratch towards the elaboration of sophisticated constructs through deductive steps and definitions of new mathematical notions. The memories from my studies with these books, taught by illustrious mathematicians who wrote them, are still present in my mind. I remember that the apparent simplicity of the writing concealed a very high degree of complexity. Whenever I saw 'it is clear that …' in the middle of a proof, I knew that I would probably have to invest a lot of effort in order to see such a crystal-clear truth. Also, I never understood why new ideas and new definitions were introduced. I should confess that these books were too difficult for me. However, I was mesmerised by the beauty of their presentation. I felt as if a secret was to be found therein and that the reward of my efforts would be the revelation of this secret. In parallel with my studies at the university, I began learning Talmudic texts. These texts typically consist of protocols of discussions amongst sages. These protocols often show undecided and open discussions and multi-level commentaries on those discussions without clear definitions of the ideas at stake. Although the mathematical and Talmudic worlds seem to have several similarities, they are very different. The first relies on clear definitions and inexpungible proofs. The second always leaves room for doubt and for new directions. And as a young adult, although I appreciated both worlds, I saw no connection between them.

I enjoyed very much earning what is called the *Agrégation de Mathématiques*, a French certificate for teaching mathematics at the college level. This certificate, which focuses on how to present/teach all possible topics in undergraduate studies, reflects another positive aspect of French education: the taste for encyclopaedic overviews of ideas at an elementary level. For the first time in my higher education, after five years at the university, I could understand the significance of ideas presented very abstractly, as well as their usefulness. And like all my pals, I became very fluent in lecturing on exciting ideas in mathematics and telling stories about them. For the first time in my life, I could speak mathematics.

I then began teaching mathematics in France and then in Israel at various levels. My first experiences in different cultures and different levels were frustrating. I failed to convey a sense of aesthetics in mathematics or its appeal to rigour and method. I realised that mathematics learning in classrooms is sown with failures or major obstacles, but I especially experienced a very poor level of talk in mathematics classrooms. My mathematical stories were not of interest to my students, and I often failed to understand them. Even so, I specialised in mathematics education, wrote textbooks and elaborated computerised environments to help students learn difficult ideas in mathematics almost only by themselves. I completed a PhD in Mathematics Education. My supervisors, Maxim Bruckheimer and Tommy Dreyfus, were mathematicians who had contributed to the promotion of mathematics education as a new research field. However, I felt that in order to understand why and how children engage in productive talk in mathematics, I should suckle from more general breasts. My experience at the Learning Research and Development Center (LRDC) at Pittsburgh University was a turning point in my career. The center had been dominated in the past by influences of the cognitive revolution (with Allan Newell and Herbert Simon at Carnegie Mellon University in Pittsburgh). However, under the direction of Lauren Resnick, LRDC instigated new directions in learning and instruction, especially the incorporation of cultural psychology into the study of learning. I capitalised on the extraordinary diversity of first-class scientists at LRDC to complete my professional development in the learning sciences. To cite only a few influences, I learned from Micki Chi, Gaea Leinhardt, Stellan Ohlsson, Leona Schauble and, of course, Lauren Resnick during my post-doctoral studies. Resnick's article 'Reasoning in Conversation' (Resnick et al. 1993) is certainly a landmark in the encounter between learning processes and forms of talk. In the early nineties, the relations between

forms of talk and reasoning processes were not articulated yet. However, the word 'argumentation' was in the air.

My first studies after I was appointed at the Hebrew University in Jerusalem were dedicated to talk in mathematics classrooms. I hoped that I could adapt general methods I learned at LRDC to mathematics. However, I quickly understood that the topic of mathematics is one of the most recalcitrant to new forms of talk: it is too authoritative and too much centred on logic and formal proofs. I began articulating a new pedagogical vision. I began using the term 'argumentation', but I did not know exactly what I meant by it, from an educational point of view. I remember very well a beautiful cruise on the Ionian Sea in 1997. I took with me the *Fundamentals of Argumentative Theory* by Frans van Eemeren and his colleagues (van Eemeren et al. 1996). Each of the islands I visited was the occasion for reading a new chapter. Sea (water), sky (ether), earth, and sun (fire) – almost nothing else on those splendid and scorched places. I finished the book at the end of my adventure, knowing that I had touched the foundations of something big that would excite me in the future, but I did not know how because the book was about well-established theories with no apparent implications in education. However, I fuzzily felt that the numerous references of the *Fundamentals of Argumentative Theory* to Greek and Roman rhetoric could also mean that fruitful bonds could be created with other cultures and especially with other contexts. I knew that the educational context that was missing in the book was a new world to be discovered and studied.

During the next years of my career, I realised that it is very difficult to create conditions for productive argumentation. Somehow, the educational system has lost a tradition of oral learning practises. Progressively, I became aware of the fact that my Talmudic training bore very rich habits of talk that had been gradually abandoned. In addition, I discovered that I lacked definitions and theoretical tools to define what I envisaged by argumentation in an educational context. Two encounters were decisive in this matter. First, I spent a sabbatical at the University of Neuchâtel, where I met Anne-Nelly Perret-Clermont. My visit helped me to appropriate tools from social and cultural psychology. My collaboration with her also helped me to understand the work done by neo-Piagetians with respect to socio-cognitive conflict and to realise that my interest in argumentation for learning was theoretically and practically worthy. My encounter with Michael Baker was a pivotal event in my scientific development. His articles in 1999 and 2003 already bridged between the general argumentative theory and the learning sciences by focusing on changing the epistemic

status of propositions in collaborative interaction. I felt that Michael had created the beginnings of bridges between the two and that, nevertheless, a lot of work was still to be done. A third thing that I discovered – I think quite in parallel with Michael – is the incredible potential of computerised representational tools for facilitating unguided argumentation. Accordingly, I capitalised on European Union–funded projects to develop with my research team and other European institutions' two tools, Digalo and Argunaut, for facilitating productive argumentation and its moderation by a teacher.

Like Michael, I felt like a builder who can create a new (virtual) reality in which talk is richer and can help to discover new knowledge, often without the help of a teacher. I found that when an adequate design is created, the resilience of what happened in argumentative settings was impressive. Animated and rich discussions remain in our heads or in our hearts, like the disputes there at my father's workshop. Somehow, creating adequate designs, even if it involves immense work and demands a lot of creativity, generates talk in places where people were almost silent. With meticulous designs, students can engage in vivid discussions in mathematics instead of inscribing arid proofs. In history, they can engage in heated debates, they can speak about the past, and they can speak about themselves. In civic education, they learn to live together, not by learning about democracy or about kinds of political regimes, but by participating in discussions in which they do not agree with the other but respect him or her, listen to him or her or build on his or her ideas. To some extent, I feel that I modestly contribute to the writing of a new history – the history of educational talk – and that I assist in one of its most exciting periods.

I [MJB] was born in Yorkshire, the largest county of the north of England, to a long line of Welsh coal miners and tenant farmers on my father's side and an undeterminably long line of Jewish and gentile tailors and seamstresses on my mother's side.

I suppose that my first argumentative opponent was my father – or, rather, he was a non-opponent because arguing with him was not permitted. So I carried on the argument with him in silence. In any case, talking was not his strong suit in general: that was my mother's domain (when asked a few years ago if she had any hobbies, she replied 'Yes, *talking*'). But there was no debate with mother either; rather, a flowing conversation about previous conversations – what she said and he said and I said, and 'No! He didn't say that, did he?' And 'What did you say in reply?' – and questions about what I felt or liked.

But I must have felt a need to express my voice, or at least to be able to show that my father was, of course, wrong on everything (of course, he was not), but in a way that was somehow *not* like the affectively charged, intense flow of words of my mother. I think it was some kind of desire for dialogue, looking back, where dialogue was a way of peacefully and rationally talking about things that was the opposite of authority, violence and feeling. Where was that world I imagined and yearned for? It was first of all in the public library.

A world I discovered very young. The hushed silence, the smell of books and the varnished oak shelves – the latent tension and seduction. I saw the rows of shelves and realised that here lay another world, my world. After a while, I discovered the section marked 'Philosophy' and delved into it because, contrary to sections such as 'Geology', 'Sport' and 'Music', I had no idea what that was. Bertrand Russell's *Problems of Philosophy* made me realise that a world of reason and argument (and beauty) existed on subjects that seemed to have something to do with important questions in life. Then, reading Russell's *Why I Am Not a Christian* – would I be refused if, as a thirteen-year-old boy, I tried to borrow such a contentious book? – enabled me to become an argumentative opponent, a young rebel, in a different sphere of life. They (the elders) politely suggested that I might want to consider leaving the Protestant church to which my parents had sent me, once, at the approach of my confirmation, they had asked me the stupendous question: 'Do you believe in God, Michael?' 'What does it matter what I believe?', I thought, 'God simply *is*; that could have nothing to do with my belief.' So I replied (the insolent boy that I was): 'I don't understand the question.' Words could be part of a dialogue game and have consequences, too.

I studied philosophy and psychology at the traditional University of Durham (UK), not so far further north from where I had been brought up. There they taught us that philosophy – the analytical philosophy of the 1970s and preceding decades – simply *was* argument, logic, reasoning, dialogue, debate. The budding philosopher was supposed to be a sort of 'scientist of language', who defended no particular point of view and who should be able to analyse and expose the errors in any point of view whatsoever! How marvellous: that should enable me to say something smart about anything and everything. Another thing I learned was that these kinds of rational, calm, logical discussions seemed to be in some way specific to a particular social *milieu*: this was how English gentlemen and gentlewomen spoke. And I was not one of them. Therefore, did I in fact have the right to learn how to talk in that way? I assumed I did.

What playful joy to be able to discuss endlessly arguments for and against all and any views, most of which I didn't really understand anyway.

But argumentation, dialogue, getting to the foundations of things had become part of who I was. My PhD in cognitive science, at the Open University (UK), completed in 1989, was largely about that, brought up to the tastes of the day: a computer programme that was (barely) capable of negotiating and arguing about the nature of knowledge. Was it in some way dedicated to my father and, in a quite different way, to my mother, neither of whom, in their different ways and for their different reasons, did that kind of thing?

I went to live and work in France after my doctorate and was fortunate enough to have been recruited by one of that country's foremost fundamental research institutions, the *Centre National de la Recherche Scientifique*. There I fell into the bottomless pit of trying to understand the 'full' complexity of argumentative phases of dialogues between teenage children in science classrooms. This was real unconstrained dialogue, not the kind of short example that logico-pragmatic researchers invented to illustrate their theories. I suppose that my approach was Wittgensteinian (the 'first' Wittgenstein), in that having thrown at the data all the logico-pragmatic machinery I could muster, I still felt that the most interesting part of what was happening was precisely what could *not* be captured by such analysis (analogous to the 'mystical' of the *Tractatus Logico-Philosophicus*): conceptual shifts, interpersonal relations, emotions.

I began to read French philosophers from the inside – inside the culture, the place and the language. It was a transformative experience. I had been taught, in England, that philosophy *was* argumentation, dialogue. Now I found that for twentieth-century French philosophers – they were not in fact really 'philosophers' from the point of view of Anglo-American philosophy; rather, they were literary, social and political theorists – dialogue was the opium of the people, a kind of verbal smokescreen elaborated by the ruling class to cover up fundamental class struggles. Strangely, it was only French-language religious philosophers – whether Catholic (F. Jacques) or Jewish (E. Levinas) – who considered dialogue and argument worthy of philosophical development. Here philosophy was not 'argument' – what was the point of all those arguments that led nowhere and changed nothing? – it was the activity that creates concepts (G. Deleuze) or that was oriented towards social action. And people didn't seem to 'debate' around the dinner table and on television in France in the way they did in England, either. This was no reasonable discussion between gentlemen and gentlewomen in a philosophy seminar;

it was a verbal fight with no holds barred. So what was the point of arguing anyway if it became a verbal fight?

It was at this time, in the early 1990s, that I first met Baruch Schwarz, in Lyon, as he was passing through for a research workshop. I discovered his research on argumentation in the math classroom, and it seemed to correspond to everything that I was not. Whereas I had got lost in microanalysis without end, the work of Baruch had breadth, as well as depth and rigour. He had mapped out a whole new field of argumentation in education, the types of tasks where argumentation could be of some benefit, the ways in which it could lead to learning, how teachers could support it, the role that computers could play and so on. So we had a field to work in.

Over the coming years, we organised seminars together on argumentation and education, and we brought together a small group of like-minded researchers. What drew us all to this? It seemed so obviously important because the ability to argue, to debate, rationally was, after all, one of the pillars of the European university since its inception. So why weren't there more of us, working on this? There were – or at least people who took up the idea of 'argument' in education as a fashionable or progressive banner. And then there was the matter of computers, designing interfaces that students could use to create diagrams of arguments together. And there were unwieldy projects financed by the European Union that enabled us, each with his own project, to get funding to go into classrooms and see what kind of culture of argumentation and debate could be found there. We were both involved in series of such projects for over fifteen years.

To close this autobiographical reflection on dialogue and argumentation, I would like to tell a story about a school in which I did field work with a younger post-doctoral colleague (François-Xavier Bernard) on the southern outskirts of Paris[1]. This was a technical high school, where the unsaid truth was that it was for the children who weren't so academically minded. We went there, to experiment with software that enabled children to debate societal questions (such as the advisability of French nuclear energy policy) in small groups with the help of a teacher who had been specially trained in the use of media in education.

Apparently, the study simply didn't work. The students (around sixteen- or seventeen-years-old) refused to argue, to debate, in the way that we wanted. They played around and wrote to each other on the computer in the way they probably spoke to each other outside the classroom, with a special kind of slang inspired, on the outskirts of Paris, from gangsta rap videos. 'But Monsieur, we can't do this, don't you get it?', said one of the

boss boys of the class, 'We're bad students!', he laughed, together with the rest of the class. This made me think of an accusation that a French school teacher had made to me over ten years before according to which, in working on argumentation, I was unfairly only catering to the good students, the ones from well-to-do families. It seemed that she thought that argumentation, with its noble ancient philosophy and French private Catholic school ancestry, was not for the ordinary masses.

I refused to believe it.

Any rational researcher would have given up and gone to another school where the children were, for whatever reason, more cooperative. But we decided to stay with the teacher and her class to the end of the study, months later. Taking a much closer look at the way in which the students discussed, speaking to each other, or via the computer, we found that, of course, they were able to argue; their reasoning was just as subtle as anyone else's. That much was obvious, but their subtle reasoning was wrapped up in a kind of discourse, a way of speaking – insults, jokes, slang and all – in which one does not usually expect to find it. We had to abandon the study in the end, when one day a group of boys started fighting in the classroom (not about the debate but about sneaking onto others' computers to delete their work and write obscenities in its place). The teacher said stop; with the introduction of that new way of working in the classroom, it had simply got out of control.

I know that that teacher, who said to me well over ten years ago that education founded on argumentation, debate and dialogue was only for the smart bourgeois kids, was totally wrong. It is for everyone; it's a psychological and communicative skill shared by everyone that can be channelled towards educational ends. It is simply that, at first, when I spoke in that gentleman's discussion at a bourgeois English university, with my northern England accent, my companions no doubt thought I was less smart than they because they couldn't at first hear beyond my accent to hear my arguments. I had no such accent when I wrote.

These were conversations, discussions, disputes or debates that we had carved into our memories as testimonies of our life with others. For us, the people arguing in the fur atelier, of a father's refusal of argument, of the English gentleman's practice of debate in a bourgeois university, the kids in a tough school in the Paris outskirts who could argue but didn't . . . all remain present as vivid *milieux* that moulded our selves. These are not random social discursive practises; something intense emerges from them. Of course, the term 'intensity' is totally fuzzy. Argumentation is about

these intensive discursive practises. Many books have been written and many theories have been elaborated on argumentation. They are replete with examples from *milieux* in which argumentation arises: from the court, politics, newspapers, or informal discussions in familial circles or amongst friends. There is a big absence in this list of *milieux*: the 'educational context'. We will show in this book that this is largely because during the nineteenth and twentieth centuries, schools left no room for argumentation. We will also show that this absence augurs a highly conservative educational system that does not prepare new generations to build a better society. This has not always been the case, though: in various cultures, vivid argumentative practises have been enacted for long periods, until they were repressed. These fluctuations are linked to turbulence in the political realm. But, if in the past the political realm imposed the educational agenda, it seems that new forces in the educational world resist nowadays against the political and provide interesting counterparts. The educational world, as we will claim, can enable the constitution of a 'deliberative democracy'. This term was first coined by Jürgen Habermas (1970) to express a vision of how classroom dialogue should take the form of an *ideal speech community* that could lead to *deliberative democracy* by handling power relations reasonably.

We will see in this book that although the ideal speech community is still a vision and that whilst the *lieux* ('places') of argumentation in education are still uncommon, the various educational institutions that are committed to the implementation of argumentative practices have undergone profound and very positive changes. We will show that in addition to the constitution of a deliberative democracy, engaging in learning tasks through argumentation is highly beneficial because it may promote knowledge co-construction. All these potentialities are not easily concretised, however. We will claim that a theory of 'argumentation in learning contexts' is necessary. Also, considerable effort is required to elaborate pedagogies that can host the implementation of argumentative practices. The first underpinnings of this theory will be established on the basis of numerous experiments in which the conditions of the emergence of argumentative discourse are analysed, the characteristics of the deployed discourse are identified and the achievements of the discussants in further activities are evaluated. We will take then a pro-active position in proposing design principles for productive argumentation.

The *overall aim of this book* is to lay the groundwork for a new theory of learning in and by argumentation dialogue. We proceed by examining

dialogical and argumentative practices from *historical, theoretical* and *practical* points of view, each of which is more or less present across all chapters. The *historical* viewpoint that we adopt here concerns not only the changing roles of dialogue and argumentation across historical time and different cultures but also the development of theories of dialogue and argumentation themselves, together with the pedagogies to which they relate, over the previous hundred years. The *theories* that we critically review are those of dialogue, argumentation and learning, with a view to achieving a new way of understanding the relations between them. We examine educational *practice* by both analysing concrete examples of argumentative interaction in varied classrooms and reviewing approaches to designing educational situations for productive argumentation. Each of the main chapters of this book, from Chapters 2 to 6, can be read separately, as essays on specific themes, but chapters also build on each other within a general movement from the historical to the theoretical then to the practical.

In Chapter 1, our aim has been to motivate the importance of dialogue and argumentation throughout everyday life and in particular in relation to educational contexts. Chapter 2 brings together two different worlds: the world of the political/ideological and the world of practice in educational institutions in relation to talk practices. We first sketch a very rough picture of the history of the philosophy of dialogue from classical Greece to Kierkegaard, Buber and Levinas. We explain that the post-Hegelian resurgence of the philosophy of dialogue provided a propitious ground for societal changes and that education may play a central role in these changes through talk in classrooms: talk, especially verbal communication, is the most direct way to connect teachers as representatives of a system of norms and values and their students.

We then provide a sketch of changes in educational talk in different times and across different societies. Our short and incomplete historical discussion focuses on dramatic changes in educational practices of talk in various societies. The perspective is historical-cultural, suggesting that educational talk is highly sensitive to the political/ideological. We rely on Platonic dialogues to extrapolate the changing nature of talk in classical Greece in the fifth and the fourth centuries BCE in nascent Athenian democracy. We then advance to the Middle Ages, during which a tremendous political and ideological thrust was accompanied by profound changes in educational practices. In that period, educational institutions were to a large extent religious institutions. We review the practices that emerged in the first European universities that were critical-dialectical

practices at the time of the Scholastic movement. At the same time, the rise of Talmudic studies amongst elite Jewry and dialogical-argumentative practices in Islamic society came at a time when political power in Europe and Islamic states was not centralised. We show that especially in Christian elites, universities were *lieux* of argumentation and dissidence. We mention reasons for the decline of dialogical and dialectical practices in the Christian educational institutions and their alteration in Mediaeval Islamic institutions. We relate these changes to political turmoil that restricted autonomy. We analyse the societal repercussions of these changes (both political and educational). We also show that, paradoxically, the powerless structure of Jewish society as a minority enabled more persistence in dialectic practices, although they were contested by religious authorities in this relatively closed society. We then describe the ideological and political dimensions of the progressive pedagogies that have been implemented since the 1960s. We show that argumentative practices – even when not denoted as such – are central in these pedagogies. They are central for progressive educational change.

The third part of Chapter 2 is dedicated to the kind of talk that takes place in most classrooms in Western countries. We show that talk is poorly used. It is generally teacher centred in that the teacher chooses the issues to be discussed, asks questions, controls answers given by the students and draws the conclusions he or she planned to reach before talking with the students. We also show that talk practices in small groups are generally impoverished. We analyse the historical and ideological roots of this state of affairs.

We conclude Chapter 2 by describing two important progressive pedagogies that struggled against the then-current nature of classroom talk and whose ideological postures led to their failures. Freire's *Pedagogy of the Oppressed* (1970) adopts a radical critical position towards societal and the political situation. Through critical dialogues, the teacher aims at enfranchising students from the yoke of the dominating class. This dissident activity was repressed by the political system in power. At the other extreme, Alexander's *Towards Dialogic Teaching* (2005) relies on the scrupulous observation of talk practices in many classrooms from several countries. These observations led Alexander to constitute repertoires of (best) practices and to consider *Towards Dialogic Teaching* as based on the flexible and sensible use of those practises. *Towards Dialogic Teaching* encountered many problems amongst teachers who were invited to implement it. Amongst them, the fact that practices were presented as techniques did not help them in facilitating meaning making. We stress that in

contrast with the *Pedagogy of the Oppressed*, *Towards Dialogic Pedagogy* did not provide any educational/societal vision. We conclude that pedagogies that intend to change talk practices should find a balance between accounting for traditional educational practice and striving for societal change.

Chapter 3 begins with the insight that we reached at the end of Chapter 2: although argumentative practices are very powerful, their implementation in schools is sown with traps. Our general aim is to succinctly retrace the developments of modern argumentation theories to discuss their relevance for research and educational practice pertaining to group learning that involves argumentative activities. We explain that the two books that founded modern (twentieth-century) theories of argumentation, *The Uses of Argument* (1958), by Stephen Toulmin, and *Traité de l'Argumentation: La Nouvelle Rhétorique* [*The New Rhetoric: A Treatise on Argumentation*] (1958), by Chaïm Perelman and Lucy Olbrechts-Tyteca, were written against the background of both a post-war reaction against ideology and the logicism of Frege, Russell, Whitehead, Ayer and (the 'first') Wittgenstein. The two books opposed the theoretical stance according to which the problems of philosophy – and of society – could be solved, or dissolved, by careful logical analysis of language and the examination of the correspondence of the logical terms to 'facts'. Both Perelman and Toulmin reacted against the violence that such analyses do to language and to its arrogance with respect to professional social practices such as politics and law.

Both Toulmin and Perelman take law as their primary example of a domain or social practice that exemplifies types of reasoning that cannot be reduced adequately to formal logic. Toulmin proposes that logic be treated as 'generalised jurisprudence' and argument as a matter of presenting a 'case' in defense of a claim. Perelman makes many references to jurisprudence and extended his work after the *New Rhetoric* to the philosophy or 'logic' of law. With respect to an age-old distinction, for Perelman, argumentation can be *persuasive* with respect to a particular auditory (such as a jury) and *convincing* when presented before the more general 'court' of 'all reasonable beings'. Finally, both Perelman and Toulmin are concerned with the complexity of 'real' argumentation in everyday language and, in particular, specialised practices such as law and science.

Beyond these general similarities, we explain that the theories of Perelman and Toulmin exemplify a *basic fracture* in argumentation theories, that we shall term (inspired by Plantin 2005) 'argumentation as discourse' (carefully crafted so as to make listeners adhere to it) versus

'argumentation as structure' (of statements in support of a claim). Perelman and Toulmin see argumentation as a technique for structuring discourse in order to lead the auditory to accept it; the second perspective sees it as a complex and differentiated structure of interrelated statements, designe to support claims. Both theories are essentially monological, concerning fundamentally texts or speeches. Both are highly relevant to education. For example, Perelman's *New Rhetoric* merges Aristotelian dialectic and persuasive discursive techniques that may help the audience (the learners) to become convinced of the correctness of the argument brought forward. Toulmin's argument schemes provide a language that is different from that of formal logic for specifying the roles of various types of statements in an argumentative discourse.

We then map out the principal modern theories of argumentation. We propose that they can be seen in terms of two dichotomies: discursive versus structural and monological versus dialogical. The monological theories are those developed by Perlman and Toulmin, which are, respectively, discursive and structural. The dialogical theories are the discursive theory of argumentative interaction (Plantin 2005), and the structural, 'pragma-dialectic' theory, developed by Frans van Eemeren and Rob Grootendorst (van Eemeren & Grootendorst 1984). For Plantin, argumentation dialogue is a *confrontation of discourses*. From this confrontation emerges a *question* to be debated, to which a discourse and a counter-discourse are the justifications for the answers 'Yes' or 'No' to the question. Plantin's positioning of the *question* as emerging in the centre of argumentation dialogue (and not imposed at the beginning of it) is highly relevant to education. After all, what could educators wish for more than that students ask themselves and others relevant and well-defined questions?

For van Eemeren and Grootendorst, argumentation dialogue is conceived of as a multiparty game with a starting position, allowable and obligatory 'moves' (speech acts) and rules for deciding who won or lost. The theory is intended to be both descriptive and normative (deciding what is a reasonable way to discuss, for which the dialogue game is governed by a set of rules). Argumentative discussions go through several stages: confrontation, opening, argumentation and concluding. As suggested in their work, the set of rules and the stages proposed seem suitable structures for fostering argumentation dialogues in educational settings. Of course, research is necessary for checking this working hypothesis. However, the four families of normative (and, to some extent, descriptive) models put forward by modern argumentation theories provide possible tools for understanding learning according to progressive pedagogies.

Chapter 4 focuses on progressive pedagogies and practises. It shows the growing role of argumentation in these practices. We first examine the ideological roots of the pedagogies. We trace their development from the century of Enlightenment and to ideals of Rationality as they are expressed in the writings of Condorcet and Locke. John Dewey expressed these ideas in an educational vision directed to an on-going establishment of democracy based on experience rather than authority. Two educational movements followed (and were partly inspired by) Dewey's educational vision. The 'critical thinking' movement mainly aims to foster individual skills associated with rational judgment and argumentation. This movement, which thrived from the 1970s to the 1990s, fitted high-level students and strengthened a hierarchical social stratification. Also, and related to this problem, the pedagogy in the critical thinking movement was highly monological and individualistic. For example, the argumentative practices to be fostered were principally the individual evaluation and elaboration of arguments and counter-arguments based on evidence and theory. Critical thinking did not challenge the foundations of society. Students were invited to belong to one of its elites without changing social stratification.

The 'critical education' movement promoted by Paulo Freire in Brazil and by Ira Shor and Henri Giroux in the United States was aimed at enfranchising adolescents and young adults from the chains of an alienating and oppressive society. Realising one's consciousness ('conscientisation') was a required first step of 'praxis', defined as the power and know-how to take action against oppression whilst stressing the importance of liberating education. This radical left-wing vision, cultivated on Brazilian soil, was transformed in post-modern, anti-essentialist perspectives of the individual, of language and of power. In critical education, the role of the student changes from object to active, critical subject. In doing so, Freire suggests that students undergo a struggle for ownership of themselves. In a classroom environment that achieves such liberating intent, one of the potential outcomes is that the students themselves assume more responsibility for the class. Power is thus distributed amongst the group, and the role of the teacher becomes much more mobile, not to mention more challenging. But critical education went further in challenging the goal of education to train cognitive abilities and in rather opting for the view that education is to take essentially indeterminate beings and give them social identities. Such a radical movement raised fierce opposition primarily because it is programmatic. It is aimed at fighting hegemony, even the hegemony of rationality.

Argumentation according to this pedagogy is central, too, but the standards for good argumentation are to be pluralistic only.

This dissident pedagogy, which was popular from the 1960s onwards in some politically engaged circles, was superseded by 'dialogic pedagogies' that aim at integrating the best aspects of critical thinking and critical pedagogy. Dialogic pedagogies stress the centrality of dialogue based on Mikhail Bakhtin's theory of 'dialogism'. According to dialogic pedagogies, 'partners engage critically but constructively with each other's ideas.' We point at the danger of 'domestication' of the dialogical through imposed ground rules. 'Playful talk' and 'reflective dialogue' help to materialise the Bakhtinian idea of the *infinalisability* of dialogue and its *creativity*. As mentioned in Chapter 2, Alexander (2005) elaborated what he called 'dialogic teaching', a dialogic pedagogy that includes a repertoire of approaches from which teachers can select, on the basis of fitness for purpose in relation to the learner, the subject matter and contextual opportunities and constraints. The repertoire is about *organisation*, *teaching talk* and *learning talk*. We show that this is not enough and that the pedagogy should integrate the dialogical and the dialectical. We show that this integration is particularly natural while participating in argumentative activities such as critical discussions and the co-elaboration of arguments. We also show the necessity of the alternation of creativity/compliance, finalisability/infinalisability, and guidance/absence-of-guidance in school activities. Dialogic pedagogies therefore have inherent theoretical contradictions but can help in handling positive relations to authority as well as in striving towards autonomy and appropriation of important societal values (respect of others, solidarity, rigour, etc.). Because argumentative practices can incorporate at the same time dialectical and dialogical aspects (e.g. by attacking ideas while respecting their proponents or co-constructing a valid argument), they can help to avoid the shortcomings of critical thinking and critical education.

Recommendations that have been made about the implementation of dialogic teaching are too general, however. How should the dialogical and the dialectical be handled in different disciplines? Following Dewey's advice, the elaboration of dialogic pedagogies relies on experience. The sources that have had the most profound influence on new pedagogies are the ways that accomplished professionals behave in their trades. We will describe their practices in science, mathematics and history from ethnographic accounts and from reports of scientists. What emerges from descriptions of science-in-the-making, for example, in laboratories, is that *scientific knowledge is the product of collaborative argumentation*

(cf. Osborne 2010). If education aims to move closer towards actual practices of scientific knowledge elaboration, it should therefore also be based on collaborative argumentation (which, in later chapters of this book, we also term 'deliberative argumentation'). Moreover, competition is not exempt from this collaborative argumentation. This type of activity is highly multimodal, involving gestures, figures, diagrams and texts.

In the final part of Chapter 4, we review the implications of the adoption of dialogic pedagogies in the light of a better understanding of the activities of professionals in the context of their professions. The implications are enormous: new norms, new practices in new social settings (e.g. in small-group work); the role of the teacher becomes extremely subtle as he or she needs to combine great care with minimal intrusion. We describe this new classroom reality in domains such as mathematics, sciences, history and civic education. In each domain, argumentation is omnipresent in various forms of practices.

Chapter 5 focuses on the processes at work in argumentative interactions, produced in varied classrooms, which have potential for learning. By way of introduction, we describe how the current interest in argumentative interactions between students as potential learning processes emerged from research on (cooperative, collaborative) learning in small groups. We claim that a theory of the processes by which students learn by engaging in interaction or dialogue of a specific kind, i.e. argumentative dialogue, does not yet exist. This chapter focuses on one of the main aims of this book – to lay the foundations for such a theory that integrates theory of *learning*, of communicative interaction, or *dialogue*, and finally, of *argumentation*. We discuss each in turn, in relation to the others. We show that the major theories of learning were elaborated in order to account for learning in *individual* human beings and do not take dialogue into account. An exception is the theory of Vygotsky, which considers social interaction to be primary in development and learning, yet this work remains programmatic and was not elaborated in relation to detailed analyses of social interaction processes. Theories of social interaction and dialogue were not elaborated with a view to understanding interactive learning. For example, conversation analysis aims to uncover the methods and resources that interactional participants use in order to make sense of their social encounters, involving negotiation of images of themselves and others. It is not concerned with phenomena that might be 'external' to or beyond the interaction itself such as learning. Finally, although we reviewed major theories of argumentation in Chapter 3, they conceive of argumentation as a universal discursive technique for arguing about

anything with anyone in any situation, which is not sensitive to specific knowledge domains. Also, the psychology of individual participants is explicitly stated to be no concern of argumentation theory: argumentation should only be concerned with commitments of people to statements, on the basis of what they have explicitly said.

We present six extracts from argumentative interactions between students in different domains: modern history, geography, biology, physics and mathematics. The aim is to identify processes of knowledge elaboration with potential for learning. We pay close attention to the data, that is, the subtle cognitive, linguistic and interpersonal processes at work in students' argumentation dialogues. We do not adopt an inductive approach and do not assume that learning from argumentation dialogue will necessarily be a single, unified phenomenon. The six extracts in different knowledge domains are aimed at demonstrating the complexity of learning in and by argumentation dialogue and at identifying general themes. One central theme is that learning from argumentation dialogue is concerned with *changes in viewpoints*. The sixth extract exemplifies the importance of design to trigger productive interactions. It showed that current theories of argumentation are pertinent for providing appropriate tools for productive interaction. Through the six extracts, we exemplify certain dimensions of change in viewpoints: the epistemic-deontic, the conceptual and the inter-subjective.

The chapter ends with theoretical considerations concerning dimensions of changes in viewpoints. As for the epistemic dimension, changes concern attitudes and arguments. We explain that the attitudes involved in interactions between learners are not primarily beliefs but rather acceptances – propositions that we decide to accept as a basis for joint reasoning. The question as to the circumstances under which proposals that students accept during argumentative interactions become part of their beliefs has been hardly addressed. On the deontic level, argumentation within isolated dialogues generally cannot be expected to change value systems. The timescale for deontic changes is far broader. The conceptual dimension of change is the domain in which argumentation theories and learning theories come the closest to each other (e.g. the argumentative move that consists in dissociating concepts). Methods of discourse analysis can help to provide accounts of how the 'discursive object' of what has been debated is co-constructed in interaction. Pioneering research shows that when the discourse thrives or falters towards a change in conceptual viewpoint, this can be considered to be an advance.

The inter-subjective dimension of change in viewpoint concerns the appropriation of a new discourse genre. And as shown in some pioneering

studies, this change often involves the understanding of social conditions for the appropriateness of an alternative genre rather than a replacement of genre whose rules are totally new to the learners. It may also involve the willingness to allow others to enter into their minds. In other cases, however, especially in e-discussions, change of viewpoint from an inter-subjective perspective may be seen as a deterioration.

The six extracts analysed in this chapter indicate that argumentative learning situations very often interweave the three dimensions just mentioned. This interweaving is appealing for integrating pragma-dialectical theory with a view of students' attitudes as public acceptance and commitment. But this integration does not deal with the more deep-seated beliefs of the discussants during and after the discussions. This central concern stresses the fact that we are only on our way to the elaboration of a theory of learning in argumentation dialogue. Another (almost) absent aspect in this theory is the role of emotions in groups of learners. In two of the six extracts of argumentative interaction, 'Hot History' and the 'Electric Debate', emotions are intense, and discussants seem to learn to regulate them as part of their interpersonal relationships. A fourth dimension of change in viewpoint should then be considered – the emotional one. But this dimension has been almost totally neglected in research on cooperative learning (but cf. Baker, Andriessen & Järvelä, 2013). Without considering this dimension (e.g. in situation of conflict), muteness, faltering or flow cannot be fully understood.

Chapter 6 focuses on 'argumentative design', the decisions that designers should take in order to favour the deployment of productive argumentation. We first give criteria for productivity in argumentation and claim that a particular kind of argumentation should be fostered: 'deliberative argumentation' designates discourse in which differences of perspective are handled critically and at the same time collaboratively. We show that the six examples in Chapter 5 are instances of deliberative argumentation and that subsequent learning gains could be detected for all of them. These insights give clear criteria for productivity. We then list the factors that favour the deployment of deliberative argumentation: problematisation, dialogue goal instructions, structuring argumentative discourse and scaffolding argumentation, the role of computer-based tools in affording argumentation in learning contexts, the role of resources (texts, devices for hypothesis testing) and arrangements, individual differences in arguing for learning and socially constructed interpretation of settings. Such factors are relevant to the design of any learning task. They are often too general to provide constructive recommendations for design. However, in the case of

argumentation, research has shown interesting regularities. An example of a factor about which little can be said in general but which displays some degree of predictability is the arrangement of small groups. We show when initial (dis)agreement among discussants can lead to productive argumentation. We also show that initial cognitions need to be accounted for, for example, in the case of two 'wrongs': we indicate conditions under which two students who have 'wrong' proposals may learn from each other. In the realm of individual differences, high-level argumentative skills are crucial for productivity but are learnable in long-term programmes. Prior knowledge is also very important (and is very often held to a high level by students with high-level argumentative skills), but students can easily be immersed in prior activities that provide a minimal background on the issue at stake, which may help in engaging in productive argumentation. Epistemological beliefs constitute an important but surprisingly under-exploited factor. Motivation as expressed in different achievement goals deeply impinges on further interaction. It appears that achievement goals can be easily instilled directly or through goal instructions that invite discussants to adopt specific types of dialogues in their discussions.

An interesting factor concerns the structuring of argumentative discourse and scaffolding argumentation. We review research on instruction involving argumentative scripts that are given orally or through electronic communication. Students' use of these scripts has lead to mixed results, probably because they impinge upon protagonists' goals that impair their autonomy and creativity (especially for good students). In contrast, we show that scaffolding argumentation through sensitive interventions that account for the needs of the discussants can be decisive for the productivity of the argumentation. We also show how dedicated technologies can help the teacher in this scaffolding. We show that scaffolding argumentation is embodied in various subtle forms of guidance, especially with technologies that enable the teacher to browse through the student's activity using awareness tools.

In this chapter we survey the role of technologies in favouring productive argumentation with respect to affording reflection and giving equal rights to all discussants, arguing that these claims are insufficiently warranted. We show that dedicated technological tools that represent graphically the categories of argumentative moves can lead to impressive discussions and learning gains in unguided discussions.

Argumentation reframes the design of learning tasks, repositioning factors such as resources (texts, hypothesis-testing devices, etc.) as tools for inquiry. Consequently, texts cease to be canonical, and students are not

expected to extract truths from them. Rather, texts should be evaluated to check their reliability, the identity of their author(s), their goals, and so on. Texts for argumentation are very often multiple, and they conflict with or complete each other. Hypothesis-testing devices are also repositioned as tools for inquiry, as they function to validate or disconfirm hypotheses elaborated by the group.

As for socially construed interpretation of settings, this is an under-developed but very promising domain. Pioneering studies suggest different ways that males and females engage in argumentation, which are related to different goal achievements. Similarly, it seems that males and females react differently to goal instructions in group work, entailing differences in further learning gains. A hardly explored research direction is the role of culture in argumentation and values of argumentation. Here also, pioneering studies indicate deep differences among people of different cultures.

Chapter 7 stresses that argumentation in learning contexts is a powerful tool for learning big ideas but that the efforts to be invested by teachers and pedagogical designers are considerable. There are ideological and political challenges facing the integration of the dialectical and the dialogical. Whilst the progressive interest in argumentation is a good sign of strengthening of democratic forces, there are enormous challenges facing the implementation of argumentation in the educational system. In addition to ideological and political challenges, there are structural and pedagogical challenges. Amongst pedagogical challenges, there is the apparent loss of power and authority amongst teachers.

We explain that in order to face these challenges, the educational system should confront structures, institutions, norms and values that do not enable changes to happen. Our first efforts on a theoretical level proposed that a combination of approaches, emphasising structures of reasoning and argumentation as a form of transformative discourse and rational dialogue, could enable understanding of the knowledge elaboration processes involved when students work and argue together in groups. Such combined theories, when applied to examples of students' argumentation dialogues, give a picture of learning based on changes in epistemic status of ideas, transformations of students' understanding of the meaning of key concepts in the taught domain and the search for coherence between their own and others' discourses and points of view.

One of the major characteristics of the theory of argumentation in learning contexts is the huge role of design in affording the deployment of argumentation. Indeed, appropriate design can overcome many challenges. For example, the pedagogical challenge concerning the alleged loss

of power and authority of teachers can be addressed by proposing diverse roles (arranging students in a specific social setting, determining a script, scaffolding argumentation or structuring argumentative talk) that provide teachers with an exciting range of responsibilities that enrich their profession.

One of the most surprising findings of research on argumentation for learning is that 'deliberative argumentation' – a kind of dialogue that integrates rigorous reasoning and respectful reference to the other – is the most productive. In other words, the best kind of dialogue from a learning point of view realises an ideal of democracy in which people create a space of dialogue within which they express their opinions, take into consideration the other and handle disagreements in reasonable ways. Our model dialectical/dialogical student recognises that knowledge is elaborated *with* others, not just acquired *from* them, and that this cannot be divorced from an ethics of interpersonal communication.

The final part of the chapter and of the book stresses that although the dissemination of argumentative practices in the educational system is highly desirable, this dissemination is a battle to be won, whose outcomes and further implications are highly uncertain. We list several dangers facing the enactment of deliberative argumentation, e.g. the exercise of power that can lead to many unwelcome manifestations. Anomalies can emerge, especially during e-discussions, such as impoliteness, exacerbation of interpersonal conflict, co-alienation and even cyber bullying. Social network sites may then be *lieux* that will be remembered because they are the realisation of the *opposite* of deliberative democracy due to domination, oppression or depression. They might also be *lieux* of superficiality, in which participants simply like or dislike. We then conclude that we are in the middle of a battle for the founding of a deliberative democracy in which education plays a central role: classroom talk in which opinions are expressed, discussed and concluded is a unique setting that moulds the democracy of tomorrow. And the more classroom talk is based on deliberative argumentation, the more it will escort future citizens towards deliberative democracy.

NOTE

1 The official, scientific story of this is published in Baker, Bernard & Dumez-Féroc (2012).