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Beyond Fragmentation:
Didactics, Learning and Teaching in Europe

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Overcoming Fragmentation: Towards a Joint Action Theory in Didactics

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1 Introduction: A new paradigmatic shift?

To start with, I will refer to what could be termed the first theoretical principle of French Didactics. This principle states that in order to understand a didactic activity (i.e., an activity where someone teaches and someone learns), you need to understand a system, the didactic system, which is a system of three subsystems, the subsystem of Knowledge (the piece of knowledge at stake), the subsystem of the Teacher, and the subsystem of the Student. By arguing that the didactic system is an undividable system, you emphasise the fact that if you want to understand a didactic interaction, where person A does something so that person B learns something, you need to study the relations between the three subsystems. The didactic standpoint holds that it is impossible to grasp the meaning of the teacher’s action without understanding the relations between this action, the student’s action, and the structure of the piece of knowledge at stake. In the preceding phrase, you have to produce two other permutations in order to enact the undivisability of the didactic system: it is impossible to grasp the meaning of the student’s action without understanding the relations between this action and the teacher’s action, and the structure of the piece of knowledge at stake; it is impossible to grasp the meaning of the structure of the piece of knowledge at stake without understanding the relations between this structure and the teacher’s action, and the student’s action.

However, we must be aware of the fact that this principle is not really taken into account in most research in didactics, even though it seems taken for granted. The main epistemological, theoretical, and methodological effort in the joint action theory in didactics consists of drawing all the consequences of the undivisibility of the didactic system. In this perspective, we claim that didactic research needs a new paradigm, a paradigmatic shift from an analytic stance to a holistic approach, in which the necessary analytic study is only part of the researcher’s work. In this respect, the main purpose of the joint action theory is to grasp the dynamics and the unity of the didactic action.

This chapter is divided into three parts. In the first part, I outline what I consider as being the roots of the joint action paradigm by presenting some fundamental aspects of the works of George Herbert Mead, Herbert Blumer and John Dewey with respect to the joint action issue. In the second part of the paper, I outline some features of the joint action new paradigm as it has been unfolding in recent works in various disciplines. In the third part, by studying an empirical example, I sketch out some traits of the joint action theory in didactics against the background of the previously identified features of the new paradigm.

2 The roots of the joint action paradigm

The Joint Action Theory in Didactics arose from empirical evidence according to which, in most cases, it is impossible to understand the student’s action in relation to knowledge without reporting it to the teacher’s action in relation to knowledge, as defined above. A didactic act is an act one cannot understand without describing it as produced in an undivisible system (Knowledge, the Teacher, the Student).

In that perspective, Mead’s work provides us with a remarkable conception of action of a social act in which certain features of the conduct of a participant are taken as stimuli by her partners, and reciprocally. As Mead (1967, p. 78) put it:

"Objects are in a genuine sense constituted within the social process of experience, by the communication and mutual adjustment of behavior among the individual organisms which are involved in that process and which carry it on. Just as fencing the party is an interpretation of the thrust, so, in the social act, the adjutive response of one organism to the gesture of another is the interpretation of that gesture by that organism — it is the meaning of that gesture."

Acting means recognising the action of others. Petras emphasises this point:

"The social act commences with the gesture, which is that part serving as a stimulus to other forms involved in the same social act. Although the gesture serves to initiate the social act, it does more than merely 'trigger' a response on the part of the other forms. In a sense, it lays a blueprint for the consequent emerging behavior. (...) The gesture of the first individual in any social act, then, will stimulate the second individual by a process of interstimulation which functionally relates them into a common social situation. The gesture, then, always has reference to the future by giving an indication of what is to follow. (...) It is the response of the second individual that gives meaning to the act" (Petras, 1992, p. 83).

The joint action thus rests on what we will call "the semiosis of others", the deciphering of actions — verbal as well as bodily — that other persons carry out in a certain situation. Blumer, one of the main followers of Mead, acknowledges this point:

"For Mead, human group life is not an addition or an assemblage of separate individual acts, each with its own independent line of formation. It consists, instead, of joint ac-
tivity, inside which the individual act is being formed as it is directed to fit into an on-going patterning of the acts of others” (Blumer, 2004, pp. 32-33).

For Mead and Blumer, elaborating an individual act means to “fit into an on-going patterning of the acts of others”. The joint action is not an action one can perform without continually adjusting one’s action to the other’s. It is a pattern recognition process. Blumer (2004, p. 100) argues in that way, while categorising distinct milieus in which this recognition process occurs:

“Mead singled out as the distinctive characteristic of a society the fitting together of the lines of activity of its participants. Such an aligning of acts constitutes both the process and the content of human group life. In all of the multitudinous instances of human association, one notes that the participants have to fit or adjust their ongoing acts to one another. Whether they be in a conversation, business transaction, game, fight, ceremony, or whatnot, the participants have to take into account the acts of one another and guide their own acts thereby. This fitting together of acts serves to relate them to each other, to make them dependant on each other, and thus to bring them together in the form of joint or combined action.”

In the previous quotation, one can acknowledge the way Blumer considers "human association" by referring to relatively closed and homogenous situations of the social world one can modalise as games. I shall return to this point.

Another scholar whose work bears on a similar conception of action is John Dewey.

As Mead did, Dewey pointed to the co-operative aspect of human communication. He considered communication as “the establishment of cooperation in an activity in which there are partners, and in which the activity of each is modified and regulated by partnership. To fail to understand is to fail to come into agreement in action” (1925/1981, p. 141).

As we will see, the question of agreement in action is a fundamental one, that we will address, in a Deweyan perspective, by relying on the notions of common ground and background. As Vanderstraeten argued, by quoting Dewey:

“Successful participation involves joint anticipation, cross-referencing of meanings. It is a coauthored looking ahead. Understanding one another means that objects obtain the same value for both with respect to carrying on a common pursuit” (Dewey, 1916/1985, p. 19). The guarantee for the same manner of use is found in the fact that the objects are employed in a joint activity. Similar ideas or meanings spring up because both persons are engaged as partners in an action where what each does depend upon and influences what the other does. Dewey does not assume that “the correspondence of things and meanings is prior to discourse and social intercourse” (Dewey, 1925/1981, p. 136), but argues that human communication is the very process in which the world is being made in common. (...) For Dewey, ‘things gain meaning by being used in a shared experience or joint action’ (Dewey, 1916/1985, p. 20)” (Vanderstraeten, 2002, p. 240).

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Here we find several seminal ideas worth emphasising. First, as Mead noticed, the process of “joint anticipation”: to be involved in a joint action means sharing a horizon of expectations. Second, in this joint anticipation process objects play a prominent role. In order to commit myself to a joint action, I need to look at the objects on which the action relies in the same way the “partners” do. Third, in characterising the joint action, Dewey acknowledged that the correspondence of objects and meanings emerged from the joint action. In his late work with Bentley (Knowing and the Known) Dewey elaborated on the notion of a transaction to acknowledge the fundamental dynamics of activity, by differentiating it from the notion of an interaction:

“Consider the distinction between the two as drawn in terms of description. If interaction is inquiry of a type into which events enter under the presumption that they have been adequately described prior to the formulation of inquiry into their connections, then – Transaction is inquiry of a type in which existing descriptions of events are accepted only as tentative and preliminary, so that new descriptions of the aspects and phases of events, whether in widened or narrowed form, may freely be made at any and all stages of the inquiry” (Dewey and Bentley, 1949).

I argue that we need to replace the epistemology of interaction by the epistemology of transaction in order to understand how meanings and objects reciprocally determine each other in the joint action.

Now we will turn to what we may call the “new” joint action paradigm which, according to us, rests more or less explicitly on the core meaning we attempted to identify above.

3 The new joint action paradigm

It is interesting to note that Mead’s and Dewey’s ways of looking at joint activity embrace all activity. They focused on joint action as a general feature of human action, in paying attention to the fact that (almost) all the acts we perform are social acts. In that way, I argue that social acts are acts that we could not even imagine if an "institutional entity" did not provide us with a kind of pattern we use to act and we are able to recognise in others’ activity.

Nevertheless, what I call the “new joint action paradigm” refers to different types of research, devoted to different kinds of joint action that one can categorise.

After trying to give a kind of definition of joint action, I will propose a small set of notions that one needs to take into account in order to understand this concept and use it properly.
3.1 What is joint action?

It is impossible to give the “right” definition of joint action given the different possible viewpoints one can take about this subject. I will give a first definition by following Clark (1996). The important point here is that Herbert H. Clark built this definition while trying to give a general account of what language is. At the beginning of his book *Using Language*, Clark argues “Language is used for doing things” (Clark, 1996, p.5). Then follows a list of descriptions of language uses, in different *arenas* of our life, which may remind us of Blumer’s diverse “human associations”. Then Clark explains what language use is:

“Language use is really a form of joint action. A joint action is one that is carried out by an ensemble of people acting in coordination with each other. As simple examples, think of two people waltzing, paddling a canoe, playing a piano duet, or making love... Doing things with language is likewise different from the sum of a speaker speaking and a listener listening. It is the joint action that emerges when speakers and listeners – or writers and readers – perform their individual actions in coordination, as ensembles” (Clark, 1996, p. 3).

Even though if there are some kinds of joint actions that do not directly involve language, at least verbal language, it seems fruitful to make language use a kind of paradigm for joint action in that it encompasses most of the main phenomenon of joint action.

It is worth acknowledging, as Clark shows, that “performing an individual action solo is not the same as performing the apparently identical action as a part of joint action” (Clark, 1996, p. 19). One can thus distinguish autonomous actions, and participatory actions, that are indeed individual acts but only performed as parts of joint actions. In other words, “it takes participatory actions to create joint actions” (Clark, 1996, p. 19).

Another important point lies in the fact that “many joint actions have the participants doing dissimilar things” (Clark, 1996, p. 19). In joint action, the participants may perform a very different action, as a dancer co-ordinating with the orchestra accompanying him, or a teacher teaching a student.

3.2 Common ground, common background

In this section, we present what we consider being a first general trait of joint action. In order to act jointly, people need to share some background (Wittgenstein, 1997, 1969) against which their actions make sense. Clark (1996, p. 92) argues that one cannot understand joint activity without being able to take into account the sharing of information – in the broadest sense of the term “information” – necessary for this joint activity:

“Everything we do is rooted in information we have about our surroundings, activities, perceptions, emotions, plans, interests. Everything we do jointly with others is also rooted in this information, but only in the part we think we share with us. The notion here is common ground. Common ground is a sine qua non for everything we do with others – from the broadest joint activities to the smaller joint actions that comprise them.”

One can see the complex meaning of such definitions in the teaching-learning process, in the didactic arena. A valuable way of considering the notion of common ground is to appeal to the concept of background, as has been described in Ludwig Wittgenstein’s works (1997, 1969) and used by John Searle (1983, 1998). It is a more general notion which refers to the set of capacities that enable us to engage in a given action, and that one needs to be able to describe in order to understand an action. In a joint action, a certain background has to be shared among the participants in this joint action. It is worth noting that in didactic situations the knowledge background can be split up into two different kinds. The first kind relates to fundamental knowledge which can be represented by what Wittgenstein (1969) called “hinge propositions”, and which is (more or less) perennial in the didactic institution. Wickman and Östman, relying on Wittgenstein (1969), refer to what “stands fast” in the didactic relationship to characterise these meanings in their Practical Epistemology Analysis (Wickman & Östman, 2002, Wickman, 2004). The second kind relates to the new meanings occurring in the teaching-learning process which are appealed to be integrated into the “fundamental” background. This is a strong specificity of didactic institutions (that they share with scientific institutions) in that they rest on the continuous production of new habits of thoughts, within an enduring frame of reference. In the didactic institution, one can describe this process as the passage, from shared meanings that emerge from the didactic process, to common meanings which constitutes at last a common background, a thought style (Fleck, 1934), and enable participants in the joint didactic action to understand each other and to act jointly (Sensve et al. 2008). I will give an example of such a process in the third section of this paper.

3.3 Joint affordances

When characterising the common background against which a joint action proceeds, one may acknowledge the importance of the objects of the environment. A thought style is not only a set of common thoughts; it is a way of perceiving. Sharing a specific common background is looking at the same objects in the same manner, in the same “seeing as”. If you and I share the same common ground, we will see this white line as the “touchdown” line in a rugby match, as Searle (2005) put it. This is to say that sharing a common background means perceiving the same kind of information from certain objects of our environment. Here we meet the notion of an *affordance*, coined by Gibson (1979, p. 127):
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This feature of joint attention “that involves openness and mutual awareness” (Eilan, 2005, p. 25) is directly linked to what is perhaps its most important function, that of fostering the common background that enables the joint action. Bruner (1977, p. 287) made the point in a pioneering work on Mother-Infant interactions:

“Joint attention” sets the deictic limits that govern joint reference, determines the need for referential taxonomy, establishes the need for signaling intent, and eventually provides a context for the development of explicit predication.

Without pronouncing the expression common background, Jerome Bruner considers joint attention as the first determinant of any referencing process. One can understand that establishing a joint reference is the first condition to enable joint action, and the first condition for joint reference to be built is joint attention. It is worth noting that even though Bruner had in mind the relationship between mother and infant when acknowledging the critical importance of joint attention, the functions he gave to this process are far from limited to this type of relationship. We argue that all types of joint action need “joint reference”, “referential taxonomy”, “signaling intent”, and “a context for the development of explicit predication”.

We may thus say that every form of joint attention can be seen as relying on a “joint triangle” between two persons (or instances) and an object, which enables the (development of) linguistic communication, as Eilan (2005, p. 7) put it:

“The existence of a common object provides for something like a joint field of reference, which enables linguistic communication about it to get going and develop.”

This essential link between joint action, joint reference, joint inference, and joint attention is grounded in the fact there is something like an object at the core of this process. This fact has truly fundamental consequences for Didactics. We argue that the joint attention triangle has to be considered as a precursor of any didactic system.

While considering the joint attention as a “provider” of a common background in the joint action process, one must acknowledge the perceptual side of this relation. Even though providing a field of reference allows for building categories and concepts, the joint attention is at first perceptual (Sebanz, 2006, p. 70). That is why, from this point of view, didactic settings also have to be considered for themselves. In effect, the relation between a common background and joint attention is a particularly complex one, one of reciprocal determination. The joint attention triggers a particular common background, but a specific common background, enacting a specific thought style, is also a seeing as. In this respect, the common background determines the kind of joint attention that takes place in didactic settings. We will underline this fact in the studied empirical example presented in the next section.

For the time being, we can briefly summarise our reasoning as follows. Joint action is produced against a common background. A common back-

3.4 Joint inferences

In order to describe an action, one has to identify the reference for this action, that is, to say the set of meanings that makes the description relevant. As we put it before, when we describe a joint action the identification of the reference rests on the recognition of the common background against which the participants in this joint action are acting. According to the elaborations we have provided, it is important to note a fundamental property of a common background. In furnishing a common reference, it enables people to draw joint inferences, i.e. in some cases the same inferences, and in all cases inferences that can be properly understood by the participants. This property of a common background has very important consequences in that it explains that the meaning-making process in joint action produces a shared logic, which may become a common logic, not understandable from a mere logical viewpoint.

Joint inferences are a kind of hallmark of joint actions. They are the more obvious signs of a joint meaning-making process. But this particular sort of inference rests on the other characteristics of the joint action.

3.5 Joint attention

In particular, the first condition for two (or x) persons to be able to perform a joint action is to attend to the same objects. But this description is not sufficient to characterise the kind of attention one needs in order to fulfil a joint action. Performing a joint action needs a specific type of attention, joint attention, in which attending to the same object means at the same time being aware of the other’s attention. As Eilan (2005, p. 25) put it:

“Any analysis of joint attention (...) begins with the observation that, for there to be joint attention in play, it is not sufficient that both subjects in fact attend the same object. In joint attention everything about the fact that both are attending to the same object is out in the open, manifest to both subjects.”

“The affordances of the environment are what it offers to the animal, what it provides or furnishes, either for good or ill. (...) I mean by it [affordances] something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment...”

Considering a common background as a key feature of the joint action thus means considering the way affordances are jointly perceived by people who share this common ground in performing joint action. We may thus argue, along with Sebanz (2006, p. 75), that action co-ordination specific to joint action “affects the perception of objects’ affordances, and permits joint anticipatory action control”.

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For the time being, we can briefly summarise our reasoning as follows. Joint action is produced against a common background. A common back-
ground can be seen as a thought style, a seeing as, which is at the same time a common way of perceiving and a common way of thinking. In this respect, the joint attention and the common ground are linked in a reciprocal relationship within the joint action. This common background allows the participants in the joint action to draw joint inferences on the basis of joint affordances which institutionalise this common background. A good way of identifying joint action is to identify the joint inferences participants draw from a given state of the world.

4 Towards a joint action theory in didactics

In this part, I elaborate on some of the generic characteristics of joint action I presented above in order to specify to didactic settings. By doing so, I hope to lay some basic conceptual features for the elaboration of a joint action theory in didactics.

I first attempt to describe the general pattern of didactic transactions that I model as a didactic game, as the core of the logical structure of the teaching-learning process. Then, from a specific case (mathematics at primary school) I consider the four main features of joint action I outlined above (common ground, joint affordances, joint inferences, joint attention) in order to show both how they help understand the didactic action and how the didactic action specifies them.

4.1 The reciprocal semiosis of others and the didactic game

In the previous sections, we showed how a “social act”, in Mead’s perspective, can be seen as grounded in the reciprocal semiosis of others. Others can be considered as bearing signs one has to decipher in order to act properly, i.e. to jointly act in a relevant way.

In a didactic institution — that is the general term I give to all institutions, in Douglas’s sense (1986), where the main purpose is to teach something to someone — there are some distinctive constraints. In order to take these constraints into account, we model the didactic transactions as a game, a didactic game.

What are the main characteristics of this game? Following our previous contention about the need to consider the didactic system as undividable, one can argue that a didactic game gathers three “entities”: the teacher, the student, and the knowledge at stake. Speaking of reciprocal semiosis of the others means, for example, that the teacher has to decipher and interpret the student’s behaviour according to the piece of knowledge at stake, or that the student has to decipher and interpret the teacher’s behaviour according to the piece of knowledge at stake. But describing the didactic transactions in that way is insufficient. I argue that the didactic game is a game in which one player (the teacher) wins if and only if the other player (the student) wins. The teacher cannot make the “winning moves” (i.e. cannot learn) in place of the student. All that he or she can do is play in an indirect way in order to enable the student to learn. In this respect, the students have to act in a corresponding way, and enact a firsthand relationship with the piece of knowledge at stake. We have described (Sensevy, 2010) this fundamental constraint by arguing that the teacher has to be reticent — the teacher must not tell the student all that he or she knows — in order to enable the student to learn on their own — a necessity we term the proprio motu clause. This fundamental property of the didactic game implies some other necessities that I have no space here to mention, but the main point is that the teacher’s reticence and the proprio motu clause strongly shape the kind of semiosis inherent to the didactic game. For example, in an everyday life situation one who answers “I don’t know” to another person’s question merely displays simple ignorance. But in a didactic institution, the teacher answering “I don’t know” to a student’s question does not necessarily mean ignorance; it may actually signify a “reticent move” from someone who does not want to unveil some important features of the piece of knowledge at stake. The student’s deciphering process is thus very complex in that the teacher’s answer has to be assessed against different backgrounds.

4.2 The nature of the common background in the didactic game

The issue of the background is likely fundamental in the didactic game. In an everyday situation, background assumptions play a critical role. If one does not share a reasonably similar background with another person in an interaction, he or she cannot hope to understand this person’s action, nor be understood by him or her. During the transaction, the background may change, but: a) it is in general a slight change; and b) in most cases, the purpose of the interaction does not consist in modifying this background.

On the contrary, in a didactic institution, one can characterise the background by acknowledging two strong differences with an “everyday interaction background”. The first difference is that in a didactic institution the background is strongly institutionalised, as a system of reciprocal expectations, which can be seen as a system of rules, norms and habits of action that Guy Brousseau (1997) terms a didactic contract. The second difference refers to the fact that the fundamental purpose of a didactic institution lies in the learning of the students. In this respect, the background has to be continually renewed. The fundamental background that fosters the didactic contract needs to be accommodated to new learning situations, to new milieus (Brousseau, 1997), at least for some of its parts. This background renewal is not
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11. T: Who has another idea? If one wants to say 17, one has to say 14, is everybody agreeing?
12. Fanny: Yes but not really because one can make 15
13. T: One can make 15 so you are giving a counter proposition
14. Laura: But one can make 14 too
15. Students: One can make 14 or 15
16. T: So we are going to play a game, go. We will ask Fanny and Laura, we seek together.

Laura and Fanny play a new game together in front of the class, as T asked them to do.
Laura has played 13. It's Fanny's turn.
At this point, the teacher reminds her of her previous commitment: "You said one can say 15, do you play 15 now? Do you keep 14 or do you play 15?"
Fanny tacitly admits and T writes down on the board "in order to reach 17, one has to play 14".

In this episode, in ST 2, Laura brought a controversy (ST 2), by arguing that 15 can be a "winning number" (which is not the case). The entire episode can be seen as the unfolding of this controversy and as the teacher's effort to have the students "rationally" accept that the "good" winning number is 14 and not 15.

By considering this short episode, one may find an illustration of some fundamental necessities of the didactic game. In order to respect the *propr. motu* clause (the fact that the students have to act on their own, from an epistemic viewpoint), the teacher was reticent. For example, when Laura made the false conjecture, the teacher did not rebuff her (STS T: one must say 14, so we will try to verify it) and proposed a rational way to test the conjecture (verifying). To mitigate the uncertainty, she tried to propose a "right sequence" (ST 11: T: Who has another idea? If one wants to say 17, one has to say 14, is everybody agreeing?), but without success. She thus decided to come back to a previous phase of the situation in which the students had to play a real game. She proposed that the students go back to the actual game by asking Fanny (who holds 15 as a winning number) and Laura (who holds 14 as a winning number) to play together facing the class. With the help of this strategy, 14 was stabilised as a winning number.

This episode can be described in theoretical terms: the Race to 20 situation is a *specific milieu* offered to the joint didactic action. Such a milieu will be considered as assimilated by the contract in the joint action if the students become able: a) to win the game every time; and b) to give rational reasons to justify their moves.

The present contract, as the background to the game, is a multi-layered one.

What we can term the first layer is a compound of two kinds of forms, of specific patterns.

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1 One can find a general description of the classroom session from which this example is borrowed in Sensevy et al. (2005).
2 The class where the research was implemented was a "regular" class. The teacher was a teachers' educator, who had been given Brousseau's analysis of the situation. In Brousseau's design, the situation is divided into three phases: a phase of action (playing one-against-one); a phase of formulation (playing team-against-team) in which "the teacher nominates one child as the team representative for each round, naming him at random" (Brousseau, 1997, p. 4); a phase of validation (the game of discovery that we are studying in this section); the students "have to put forward propositions and to prove to an opponent that they are either true or false" (ibid., p. 4). In this study, the teacher enacted the session approximately as it was referred to in Brousseau's conception.

3 ST stands for «Speech Turn».
4.3 Joint affordances and joint inferences

In a didactic institution, a main challenge consists of justifying the "automatic" affordances of the didactic milieu. In this respect, the teacher's role can be described as an enabling effort to make the student's action to be identified and recognized as affordances. A didactic process, the process of recognition, is defined as the process of recognizing what affordances are involved in the didactic milieu. This is a didactic process, specific signs, from the student's viewpoint. First, the teacher must have the ability to recognize the student's communicative and social transactions. Second, the teacher must be able to bring the student's action to the right way in a right way. A didactic process is identified by the teacher's recognition of the student's communicative and social transactions. So, the teacher is the one who has the ability to bring the student's action to the right way. A didactic process is identified by the teacher's recognition of the student's communicative and social transactions. So, the teacher is the one who has the ability to bring the student's action to the right way.
interactive activity with something in the environment that has some affordance. The relativity of the affordances and abilities is fundamental. Neither an affordance nor ability is specifiable in the absence of specifying the other."

It is important to note that joint affordances in the milieu (i.e. seeing the numbers as "winning numbers" for relevant mathematical reasons) allow joint inferences. In the studied episode, the inference about "17 is a winning number" is immediate, while the inference about "14 is a winning number" needs to be built. The "right" inference is not provided by a special reasoning, but by experiencing anew the Race to 20. This fresh experiencing is a way to elaborate a new seeing-as, against which the new inference will be possible.

Indeed, in the didactic joint action the semiosis of the other means both to be able to recognise the others' complex behaviour as signals of actions, and to gain the capacity to jointly decipher the signs of the milieu in a relevant epistemic way, with the two abilities being related.

4.5 Joint attention and joint action

As we have seen, joint attention is considered a fundamental feature of joint action by its theorists. Again, the didactic specification of the joint action may enable us to delineate the relationship between attention and action in the didactic game. Enacting joint attention may be viewed as the surest sign of an actual joint action. But in didactic institutions this relationship is strongly reciprocal. The didactic contract, as a common background, is a way to pay attention to some patterns in the milieu. That is because it selects a priori some affordances. As Fleck (1979) put it, a thought style is first a way of perceiving. Consequently, some parts of the didactic action do not really need the teacher's action to guide students' attention since the contract, which functions as a thought style, is a quasi "automatic pilot" of the didactic transactions (think of drills exercises, for example). But when a new milieu is brought to the students, there is an important need to draw their attention to the relevant features and patterns of the milieu.

This complex relationship is visible in our example. First, the current didactic contract assimilated the milieu of the game in that it allowed the students to conclude that 17 was a winning number. But, concerning the "14 is a winning number" conjecture, the students experienced some difficulties in achieving a right understanding. Thus the teacher invited them to commence an actual game. One can understand, thanks to this example, that the appeal to the "real" Race to 20 (by actually playing the games and not only by evoking them) is a way of creating joint attention to a precise part of the milieu (playing 15 versus playing 14).

In a didactic institution, to sum up, the joint attention is a by-product of the didactical contract, seen as a thought style, which enables the participants in the didactic game to notice the appropriate signs in the milieu. But when a new milieu is proposed to the students, the lack of assimilation of this new milieu can be identified in the non-accurate students' perception of some signs. In this respect, the teacher's work consists of focusing the students' attention on these signs, which will provide the expected inferences after a while.

5 Some concluding remarks

In this paper, I have tried to briefly present what I have called the "roots of the joint action paradigm". I have outlined some features of what that can be considered, according to me, as the new paradigm of joint action. The joint action theory in didactics, as I sketched out in the third section, shares some concepts with this new paradigm in that it tries to use them against the epistemological background of the works of Dewey, Mead, and Brouseau.

The educational settings that didactic theories endeavour to understand seem to be a valuable field for the development of joint action theory. In a didactic situation, joint action is simultaneously necessary and paradoxical. It is necessary since the teacher's and the student's action cannot be conceived separately. It is paradoxical since the joint action gains its ultimate meaning in the student's autonomy, thus amidst a certain kind of disappearance of the teacher's action. This leads me to the hypothesis that its complex structure, perhaps unique in the anthropological world, highlights some fundamental features of deep social actions. For that reason, educational situations can be seen as a fruitful paradigm of joint action.

References


It is important to note that in this example the joint action between the students and the teacher may be seen as relatively harmonious. But it is quite possible to analyze inefficient or problemitic joint action. Our stance is a descriptive one, not a normative one, in that we argue that joint action is a necessity of every type of didactic action.
The Curious Affair of Pedagogical Content Knowledge

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1 To begin with ...

Once upon a time I, among others, was celebrating the retirement of a kindergarten teacher at the University of Gothenburg, Sweden. She was a lively person, and many lovely stories and anecdotes were told during the evening. In one of them, a well-known professor of mathematics was once visiting a kindergarten and observed an incident of mathematics teaching. Not entirely satisfied with the event, he asked the teacher how many credit points she had acquired in her mathematics studies. The teacher replied with lightning speed, saying “At least as many as my dear professor has in teaching small children.”

2 The cornerstones of the teaching-studying-learning process

Content is one of the fundamental concepts in the teaching-studying-learning process. It is quite common to present the cornerstones of this process, in addition to content, as comprising a teacher and a student. To avoid misunderstandings, one should note that, although such models present the student as a singular concept, the question focuses on a group of students studying at the same time. Between these concepts a complex interaction takes place (Klingberg, 1995; Kansanen, 2003). With the help of the didactic triangle, we can describe the role of these basic concepts and characterise their mutual relations; emphasising their reciprocal positions can highlight their importance and meaning (Paschen, 1979; Diederich, 1988; Künzli, 1998; Hopmann, 2007).

Every relation between the cornerstones has its special meaning. The relation between the teacher and the student is a pedagogical relation (Klafki, 1970, pp. 55-65), and necessary from a young person’s point of view. It aims

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