

“Quaderni di Ricerca in Didattica (Matematica)”, Supplemento n.4 al n. 19, 2009.
G.R.I.M. (Department of Mathematics, University of Palermo, Italy)

Some Personal Reflections

Guy Brousseau

The *classroom practices* are the prerogative of the professors. They are ways of acting, habits and knowledge, acquired by experience. They can sometimes claim to be an application, an implementation of techniques or principles inspired by a science. Some are answers to contingent, accidental but repeated events, others directly express an organization of the conditions of teaching.

Pedagogical methods have been for a long time the single object of the reflections of the pedagogues and teachers. In the Sixties the mathematicians concentrated on the choice and the mathematical organization of school knowledge. This attempt was judged as a failure. Later, the psychological examinations of the students, and especially those which were limited to their school results were put forward. But by considering only the pupils, the researchers were led to be centred essentially on their errors, because the correct answers and initiatives are - as good health in medicine, the silence of organs. Their conclusions, called upon to justify very deep overhauls, drove to worse results.

Then the work of the teachers became again the main topic of concern. The attention tends always to focus either on the original devices, the "innovations", or on regrettable incidents: inadequate devices or inappropriate reactions to fortuitous circumstances. The other components of the situation are neglected. As in the previous movements, they will still be causes external to the process that will be called upon. Is the fact of being new for the community of teachers or researchers is a paramount index of quality for a curriculum? There is always a risk for these remarks to refer to foreign systems of rules or arbitrary principles.

Is it reasonable to breakdown a complex system into its component elements to examine how they work, without referring to the way they work as a whole or without ascertaining their independence?

It thus appears significant today to study the classes under operation: professors, pupils, knowledge and the circumstances which govern the transformations of these components and which result from their interactions. It is significant to also observe... observation itself, its actors, the observers (researchers, managers of education, public), their practices, their knowledge, the circumstances of their action, their interests, the use they make of the observations and their ethics too. Some precise examples below will illustrate this matter.

1. Traditionally, exercises were only a part of the daily activities proposed to the students. They only served to make familiar some types of knowledge which the students had before understood and formulated. Some more complex mental activities which were the real object of teaching were relieved by the knowledge learned through the exercises. Exercises were a transient phase, at one favourable moment, to teach certain other parts of knowledge.

Some peripheral disciplines promote the exercise as a unique and ideal model of any training and practically the unique mean of controlling its result. This vision has been adopted and imposed by managers who found it convenient to assimilate teaching to a commercial or industrial firm, in a vision which makes their work easier and served their interests. It led many teachers to reduce their teaching to the repeated presentation of questionnaires similar to the tests of con-

“Quaderni di Ricerca in Didattica (Matematica)”, *Supplemento n.4 al n. 19, 2009.*
G.R.I.M. (Department of Mathematics, University of Palermo, Italy)

trol. From now on they would neglect the other means, as academic presentation or setting in situation, oral questions, problems etc considered as less immediately "profitable"!

According to this belief school managers adopted and gradually imposed to the teachers the term *task* to indicate any intentional activity being held in the classroom. Any activity which does not answer this definition can be regarded as a waste of time.

But what is a task? A task is a work that a person – the principal - can ask another person (or himself) - the agent -, to accomplish. This work is defined in advance by its result, conditions and procedures of execution, which are supposed to be known of the two partners, either implicitly by culture, and either explicitly by a contract.

Thus by definition, a task is a contract between two entities that both recognize to know the feasible character of the parts of this contract which is incumbent upon them. It is distinguished from an order that does not evoke any condition and from a project which defines the goal, but all conditions of realization of which are not entirely determinable in advance. So an operational objective cannot be a task for someone who is unaware of the means of reaching them. In programming, before the contracts are signed, the task term is therefore ambiguous. It becomes abusive when a task is used by authorities to present their orders to point out beforehand that it will be their subordinates who will be faulty if these orders are not carried out. In the case of teaching as in that of medicine, the obligation of results is a nonsense. But in the absence of a science comparable with biology, the obligation of means condemns teaching to be only one a ritual dictated by opinion.

The professor can consider as tasks for the pupils only what at this very moment is sufficiently well known, and recognized as such, by the pupils. However what he wants to teach to them, not only do they ignore it, legitimately, but they ignore that they ignore it. And when they learn it, it is never what they had been able to imagine before (cf the didactic contract).

The teacher cannot "require", but it must wish, desire, i.e. hope for a lot more: he wants the pupil to think by himself, to produce an idea that he does not yet know and that he cannot be told. An exercise is or can be a task. A problem a priori is not one. By definition, to learn, to understand and especially to invent cannot be tasks.

To consider all the activities of teachers and students as tasks, comes down to say that all that constitutes teaching and training can be given in advance, programmed, known of both parties, said and agreed upon by them both. These conditions are obviously contradictory; the student cannot know in advance what one wants to teach him. To agree to consider teaching and trainings as tasks can only completely sterilize the didactic relation. Applied to teaching, the metaphor of the tasks is an imposture from which we can see the consequences after thirty years of use.

3. The previous examples show that the analysis of the "classroom practices" influences teaching, a lot less by its findings than by the conceptual repertory of tools that it conveys (terms and concepts).

But could we hope that to collect information in classes and to make them known outside is an honorable activity, and a legitimate one? It is not sure.

“Quaderni di Ricerca in Didattica (Matematica)”, *Supplemento n.4 al n. 19, 2009.*
G.R.I.M. (Department of Mathematics, University of Palermo, Italy)

To observe a teacher and pupils at work, it is to interfere with a deeply intimate act. Here, some balances are in perpetual evolution between the said and the not said, the desired and the achieved, the quest and the conquest, the reading and the rereading, between the temporary forgery and the true step not assumed yet; all at work to produce an understandable and memorable common history. Teacher and students, at every moment, get involved and take their chance, with the risk to be themselves durably creature of opinion of the other. Only a subtle mixture of anxious requirement, controlled rigour, leniency and parsimonious comprehension, makes it possible for the protagonists to gain essential confidence to become tame with each other and to tame an abrupt in essence austere knowledge, essentially .

In the mystery of this intimate act where each detail counts only according to the whole, it is not easy to accept a glance released from the drive of the act in progress. A foreign glance will destroy without remedy the magic of the act.

Moreover to transform this act into spectacle can be lived like a violation followed by an unbearable treason. And that this observation is accepted in advance much the result does not change. The agents turn into actors, then into witnesses because they look at themselves and discover their actions through the look of the others; they are subjected in advance to the intentions and the thoughts that they lend them; they reduce their behavior to what can be said, with what can be formulated and be accepted in the repertory of the witness.

Many apparently innocent information on the behaviors of professors and pupils diffused thoughtlessly, can be interpreted in a completely erroneous way by the grids of a partial, insufficient, superficial or one sided knowledge, because subjected to other interests that those of the pupils and whole society.

For this reason we need to become aware together of the whole of the conditions and difficulty of the venture which we had the audacity to face.