

## **Bernard Sarrazy**

### **Contract, transgressions and creation. An attempt to clarify the paradoxes of the didactical relationship in mathematics education using a didactical and anthropological approach**

During the first part of the lecture, we will study, from a theoretical point of view, the issue of transgression as an expected response given by a pupil, but unrequired by the teacher. This phenomenon is the paradoxical result of the contract which forms during any didactical relationship: "this is what you have to know, and from now on, think for yourself to show that you are able to create new uses out of what you have been taught; in other words, act in accordance with what I have taught you, but don't obey me!". So, transgression will be considered as a necessary condition for learning mathematics (different from the use of techniques, algorithm, and rules) whose conditions of existence stand at the crossroads of determinations which are both didactical (with reference to "the paradox of devolution" as defined by Guy Brousseau in the theory of didactical situations) and anthropological (with reference to the concept of "use" in Wittgenstein's anthropology and to his famous rule-following paradox).

During the second part, we will base our argument on various research in order to underline:

- a) the relevance and the interest of this theoretical approach in order to gain a better understanding of the reasons for pupils' and teachers' recurrent difficulties (for example, "you know the lesson, the teacher says, but you didn't understand it."), and the reasons why some of the means intended to regulate these difficulties fail, and
- b) the role of "backgrounds" (in the Searlian meaning of the word), such as familial educational practices and the didactical and pedagogical cultures of school environments (which are linked to values, beliefs, epistemological and pedagogical conceptions of the teachers) in order to account for the appearance of interindividual differences concerning the relations with transgression, and clarify the ways we can go beyond the initial paradox.

In conclusion, we will promote the idea of a "normative transgression" to describe this phenomenon of the sudden appearance of new creations ("transgressive" dimension) which are expected by the teacher and lived by the pupil as a measured disobedience, for it is basically in accordance with the "account books" of mathematicians (normative dimension). This is probably where the fascinating and singular essence of mathematical activity stands, between logical constraints and the boundless openness of creative possibilities.