

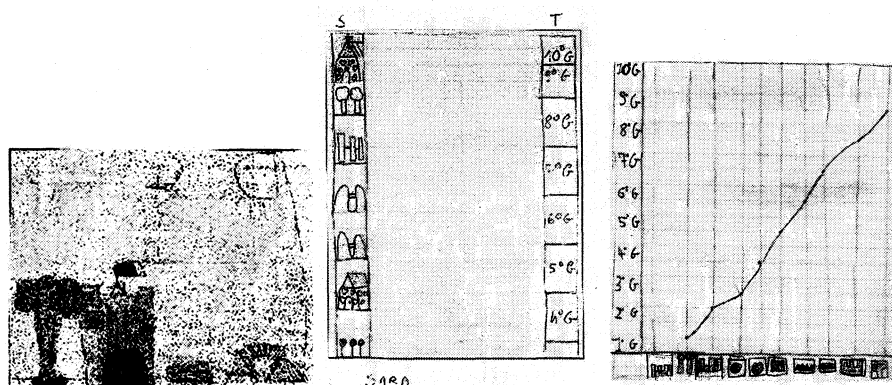
FROM NAÏVE DRAWING TO CARTESIAN REPRESENTATION

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A very important goal in mathematical education is the ability to connect different representation *registers* (Duval); but this attitude, far from being spontaneous, must be promoted in pupils. In particular the ability to represent a link between two variables by means of a Cartesian diagram, exactly as happens for every mathematical object, is the result of a long process rooted in natural thinking and growing through successive structuring stages. But in order to grasp the “cultural” meaning of a representation, children must experience the necessity of proposing their own naïve representations, and possibly of modifying them, if they want to communicate, while sharing achievements and emotions.

Following this idea, we have proposed to 6-7 aged children to dramatize a short novel by D. Buzzati *The seven Messengers*. The aim was a) to promote collective *discussions* (Bartolini) and reflections about the conceptual space-time tangle involved in any experience of motion. Ilaria says: “Space and time run together because time goes on as I’m walking.”; b) to favour a natural evolution from spontaneous drawings toward bidimensional representations (the three selected pictures give an idea of this transition).



During the classroom activity a major care of the teacher was to let the pupils: a) evoke and utilize all their previous knowledge; b) freely go back and forth from a register to another (bodily, verbal and graphical), whenever useful to understand. As a result of this activity, focused on different levels of representations, a Cartesian diagram is understood not only as a descriptive tool but also as a powerful mathematical object (from a cognitive point of view).

A detailed account of the whole activity, together with theoretical background and samples of tape-recorded classroom discussions, will be the content of a paper in preparation and will be ready for the time of communication.