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Patterns in children's drawings and actions while constructing nets of solids: The case of conical surfaces.

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The main philosophy which underlies this study is based on Piaget and Inhelder's (1967) view that children's representation of space is not a perceptual 'reading off' of their environment, but is constructed from prior active manipulation of that environment. Through the activities we used in this study, we investigate children's formed mental models of the net of physical objects. However, 'our intuitive representation of space is a mixture of possibly contradictory properties, all related to our terrestrial life and our behavioral adaptive constraints' (Fischbein as quoted in Clements and Battista, 1992). We investigate their relationship by exploring the nature and characteristics of children's mental models across a number of objects with different properties with which the children are interacting. More specifically, we study the mental models through children's conceptions as inferred from their drawings, and through their actions as observed and recorded. The consideration of children's actions, the focus on a specific group of objects with circular, conical surfaces and our attempt to generalize children's models, differentiates and extends our previous work in this area. (Potari and Spiliotopoulou, 1992). In that research we studied and analyzed children's drawings of the net of a matchbox (internal and external box), a fish-tin, a cardboard cylinder, and a soda can. Moreover, in this paper, we examine how children can develop these conceptions and actions through a situation that encourages them to reflect on their drawings and realize the deficiencies in their nets. (Authors' description of the study)

Classification: G22