

## Chapter 6

# Vicariance, Complexity, Space: Orienteering for Inclusion

### ABSTRACT

*The peculiar topic of this research - perspective taking and spatial navigation - has naturally led to cross over the course of the journey other spatial navigation comprehensions. Specifically, during prototype testing, there were several comparisons with another game, *Catching Features*<sup>1</sup>, an orienteering game that tackles the theme of space navigation from a different point of view. The point of view is that of Orienteering, a sports orientation course that consists in making a predefined path with the exclusive help of a compass and a topographic map that represents the details of the territory to be covered. The experimental path of this research has shown that cognitive processes involved in peculiar orienteering activities (map reading, spatial thinking) are also involved in the management of intersubjective relations, and make orienteering a sporting practice with considerable educational potential. This chapter develops by introducing the concept of vicariance, quickly describing orienteering as a sport activity, emphasizing links with Italian national guidelines for the first cycle of education, and, basing on revision of the scientific literature on cognitive processes involved in space navigation and the management of spatial reference systems, provides a proposal for the spread of orientation as an effective didactic practice in a training context aimed at inclusion of pupils Present Special Educational Needs. Paragraph 6.6 discusses the link between autism, empathy and perception – action process, according to neuroscientific evidences.*

DOI: 10.4018/978-1-5225-2455-7.ch006

## VICARIANCE AND SPATIAL NAVIGATION STRATEGIES

The avoidance that often the so-called normal manifest against those who are disabled is an expression of broadmindedness deficit (Murphy, 2001).

In this quote from *The Body Silent*, Murphy puts in explicit relationship with disability “the breadth of vision”, with the degree of stiffness of the perspective of the actors in a social context. In this work we will support just like orienteering sports involve directly and principally cognitive processes that are critical in the formation of broad-mindedness, ie who are cardinals in acquiring the ability to take the perspective of others.

In practice, the skills involved in the development of cognitive strategies for spatial navigation are skills that allow us to see the world from different points of view, abandoning the egocentric perspective.

The simultaneous manipulation of more spatial reference systems is an essential form of *vicariance*, through which the body solves the local complexity, formulated in terms of the problems posed to the living being on each relevant analysis level (physical-chemical, molecular, synaptic, cognitive, behavioral), through the introduction of an accessory complexity, reduced and re-coded according to the action (Petit, 2012; Sibilio, 2013).

The theoretical framework of this perspective consists of the:

*Reversal of the classical description of the mechanisms of perception and action [which] places the intentional and goal-oriented subject at the origin of the process. The subject builds his world according to his basic needs and action tools. This view has also been promoted by Bergson and Husserl. (Berthoz, 2008a)*

In this framework, the chapter develops quickly describing orienteering as a sport, and presenting a review of the scientific literature on the cognitive processes involved in spatial navigation and management of spatial reference systems, in the light of the contribution made to this specific field by neuroscience studies. In particular, the work focuses on the classification of cognitive strategies of space navigation, operated by Alain Berthoz in *La vicariance* (Berthoz, 2013), in four main types: egocentric strategy, allocentric strategy, heterocentric strategy and the *maquette3d* strategy.

The chapter then concludes with a proposal for the spread of orienteering as an effective teaching practice in an educational context geared to the inclusion of pupils presenting Special Educational Needs.

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