Communication and manipulation – the dual functions of the human hand and the duality of apraxia

Theories of apraxia frequently postulate dualities of clinical syndromes corresponding with dualities of their anatomical substrates. The most influential version of such duality opposes parietal to frontal lesions. Recently, however, the opposition of dorsal and ventral routes to apraxia has raised increasing interest.

I will propose a new version of the duality of apraxia. In contrast to the traditional model my version does not assume that the duality derives from a sequential ordering of stages within a common stream of processing. It rather postulates that independent neuronal nets support communicative gestures and spatial manipulation of tools and objects. Which of them dominates the clinical manifestation of apraxia depends on the location of the lesion and on the kind of test used for assessing apraxia. Pantomime of tool use and production of emblematic gestures are communicative actions that depend on the integrity of temporal and inferior frontal regions. By contrast, imitation of meaningless gestures and mechanical problem solving require spatial manipulation of external objects and are bound to parietal lobe function.