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VARIETIES OF INTENTIONALITY

I INTENTIONALITY

Brentano's Thesis

Intentionality is directedness towards an object. All and only mental phenomena are intentional. It is a feature of mental states, which are irreducible to physical states (Brentano 1874).
The structure of intentionality: Subjects are related to contents via intentional modes
Subject – intentional mode – content

Two Traditions

Many (*analytic*) philosophers treat intentionality primarily as a feature of linguistic expressions and ascriptions of propositional attitude contents (Chisholm, Quine, Churchland, Dennett...). Intentional contexts meet criteria for intensionality:
(a) failure of existential generalization
(b) failure of substitution of co-refering terms salva veritate

Philosophers from the *phenomenological tradition* emphasize the essential role of an agent's body and sensorimotor capacities for cognitive development and the way in which these constrain and prescribe an agent's intentional relations (Husserl, Heidegger, Merleau-Ponty...).

Proposed Theoretical Framework

Intentionality is treated primarily as a feature of goal-directed behaviour, perception and action being the „biologically primary" forms (Searle 1983), allowing embodied agents to engage in intentional relations, or „comportments" (Heidegger) to some object or goal through their sensorimotor, affective, and cognitive activities. Thus the intentionality of propositional attitudes is ontogenetically and systematically preceded by more basic varieties. The structure of intentionality:
embodied agent – intentional activity - object

Aim & Methodology

Differentiation and description of varieties of intentionality with increasing complexity in a hierarchy of levels, taking empirical data from developmental psychology and the cognitive neurosciences into account – without a reductionist impetus. The framework proceeds „from the beginning onward, rather than from the bottom up or the top down" (Gallagher 2005): The varieties are characterized according to significant cognitive abilities manifested by human beings during their development. Essential is the increasing independence from current stimuli through the use of the imagination as the power to represent objects in their absence as well as intentional relations of others (Barresi & Moore 1996).

Literature

II A SKETCH OF A LAYERED MODEL

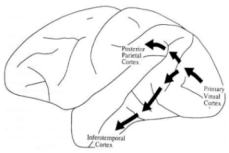
1 PERCEPTION AND ACTION

The basic level is characterized by dyadic relations between organism and object, e.g. a 3-4 months old infant being intentionally directed towards a toy, by visually perceiving or grasping and manipulating it, without understanding the relation in terms of perspective-taking or possession of mental states.

- Strong dependence on actual stimuli in current contexts of perception and action. Occurrence and structure is determined by the embodied agent in the course of its ongoing purposeful engagement with and active "exploration" (Noë 2004) of the world.
- Such sensorimotor intentionality with underlying nonconceptual representations can hardly be accounted for by theories which focus exclusively on conceptual or propositional representations (see left).

Neurobiological Evidence

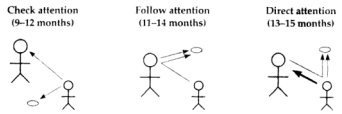
Functional bifurcation between two pathways in the primate visual system (Milner & Goodale 1995, Jacob & Jeannerod 2003):



- **Visual perception**: Semantic processing of visual information in the ventral pathway (V1 → IT) underlying non-conceptual perceptual representations ("non-epistemic vs. epistemic seeing", Dretske 1969). Brain lesion results in "visual form agnosia", leaving visuomotor capacities intact.
- **Visual Guidance of Action**: Pragmatic processing of visual information in the dorsal pathway (V1 → PPC) underlying non-conceptual visuomotor representations. Motor intentional activities like grasping depend on sensorimotor capacities and "constitute essentially bodily understanding of objects" (Kelly 2002). Brain lesion results in "optic ataxia", leaving visual perception intact.

Sensorimotor "mirror neurons" respond both when a monkey performs a particular intentional action and when it observes another individual performing a similar action. Thus, such neurons seem to represent the planning and execution of an intentional action irrespective of the subject executing it (Rizzolatti et al 1996).

2 JOINT ATTENTION



The second level is characterized by triadic relations, e.g. involving child, adult, and object to which they share attention. At 9-12 months of age children show new intentional behavior and understanding like gaze following, social referencing, directing the attention of others and imitative learning. This requires that the child (a) understand other's behaviour as intentional and their perception as attentional, and (b) to make some sort of self-other-equivalence and understand that there are alternative perspectives towards an object (Tomasello 1999).

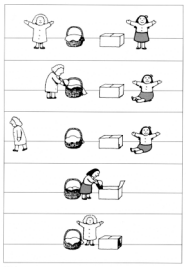
Neurobiological evidence

Activation in dorsal medial prefrontal cortex (MPFC) is closely associated with the understanding of triadic social relations between two minds and an object (Saxe 2006, Frith & Frith 2003).

3 IMAGINATION AND PRETEND PLAY

The third level is characterized by the development and partial use of the imagination during the 2nd year of life. Since children can now "hold in mind" representations of non-occurrent objects and events, which can also guide their actions, their understanding of intentionality is partly independent from current experience. A two year old may decide to pretend that a banana is a telephone, say. In order to represent – at the same time – the situation as one containing a banana and as one in which the banana is a telephone, the child must be able to understand an object's "intentional affordances" (Gibson 1979, Tomasello 1999), detach these functions from the original object and assign them to another (Leslie 1987). At this stage, infants may be said to understand (implicitly) the difference between object and content.

4 THEORY OF MIND



At the age of four children show an explicit understanding of others as agents with intentional states and hold beliefs about another's beliefs: they mentally represent other people's mental representations and understand that their behavior is directed by what they beliee to be the case rather than what really is the case (test: false-belief-task, Wimmer & Perner 1983). The condition of autism is often interpreted as a deficit with respect to this capacity (Baron-Cohen 1995).

III CONCLUSION

Intentionality is not restricted to propositional attitudes (and ascriptions of them). Rather, it can be shown that this ability develops gradually during infancy being preceded by more fundamental varieties of directedness towards objects. The most basic cognitive abilities are essentially embodied and tied to current experience, while higher varieties are characterized by an increasing usw of the imagination as the power to represent non-occurrent objects – culminating in the power to represent the representations of others.

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