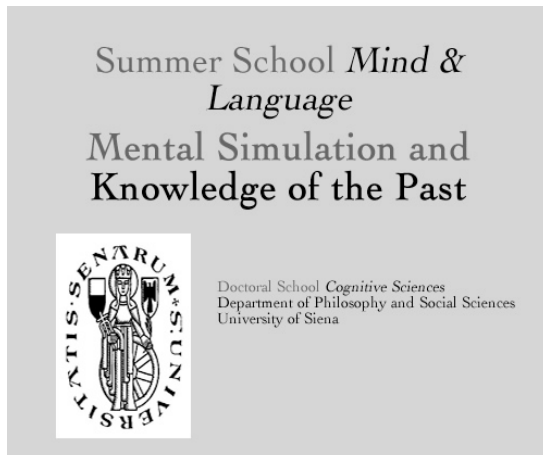


Report
Summer School on *Mind and Language.*
Mental Simulation and Knowledge of the Past

Siena, 8-11 June 2009

Marta Di Dedda e Martina Pantani



The second edition of the Summer School in Mind and Language on *Mental simulation and Knowledge of the Past* took place at the University of Siena from June 8 to June 11, 2009. It was organised by the professors of the Doctoral School of Cognitive Sciences, Gabriele Usberti and Giacomo Romano. The summer school was arranged in two sessions of two days each. The first session, held by professor Cesare Cozzo (Università La Sapienza, Rome), was about Michael Dummett's analysis of truth conditions for past events. The second session, held by professor Pierre Jacob (Institut

Jean Nicod, Paris), concerned mental simulation, action-mirroring and mindreading.

On the first day, Cozzo illustrated the notion of truth about statements concerning another place and/or time, discussed by Dummett in *Truth and the Past* (2005). He noted that, according to the principle of bivalence, every statement, like "at 6.00 p.m. in the day of his fortieth birthday the number of Dummett's tie was odd", must be truth or false. However, sometimes the chance to know the truth or falsity of past statements goes beyond our faculties because we are not in that time or place. Therefore, it is difficult to assert that past statements have always a truth value, contrary to the principle of bivalence. An opposition about the transcendent notion of truth arises. According to the realist, truth is unexceptionable, and understanding a statement means to couple it with truth conditions regardless of the possibility to establish them. Instead, according to the antirealist, past statements are true or false only because we provide them with a truth value. In fact, the truth value of a past statement is given by a direct proof, which we can find in the present time, that justifies the attribution of that truth value to that statement. In the case of empirical statements in the present time, such as "here it's raining", then, the antirealist claims that the principle of bivalence is valid because we can access a direct proof to verify them. In the case of a past statement about the same observable event, instead, the principle of bivalence is invalid because we may lack a direct proof of the event. Therefore, it is impossible that the same logical principles are valid for the same empirical statements considered in the present time or in the past.

On the second day, Cozzo discussed the turning point in Dummett's philosophy constituted by the *Dewey Lectures* (2002). Before the *Dewey Lectures*, Dummett endorsed a justificationist view about truth that yielded to a radical antirealism about the truth value of past event statements. However, in the conference *The Reality of the Past*, Dummett came to the conclusion that justificationism can avoid inconsistency only by becoming a radical view, and claimed that radical antirealism is "repugnant". Therefore, he moved to a moderate antirealism. Dummett introduced a spatio-temporal grid to explain the understanding of past



statements, and looked to the attribution of a truth value to past statements by the way in which a child learns to assess their related proof. First, the child learns what is a direct proof, i.e., a proof that is contemporary to the event that it assesses. Then, the child learns both to place present events in other spatial and temporal coordinates and to assess proofs for those events. Since it is not possible to have a direct proof for past events, the child needs to learn to refer to the community of speakers to justify them. Therefore, according to Dummett, language has the fundamental function to allow knowledge to spread over the community of speakers. Cozzo concluded by noting that, as Dummett shows, our capacity to wear the shoes of an observer is fundamental to understand past statements.

On the third day, Pierre Jacob provided a general introduction to mirror neurons (MNs) and action-mirroring by presenting a series of experiments on both macaques and human beings. Jacob noted that we can understand a perceived action either by visual analysis or by mapping the action in the motor repertoire of the observer. This led to two possible versions of action-mirroring. According to the weak version, actions that do not belong to the observer's motor repertoire and cannot be so mapped are categorized on the basis of their visual properties. For example, primates may have the capacity for a detached visual analysis of a bird's flight, but lack a motor understanding of it, since they cannot match birds' wing movements onto their own motor repertoire. On the contrary, following the strong version, an observer achieves a distinctive kind of 'engaged' or immediate understanding by mapping an agent's observed movements onto her own motor repertoire.

On the fourth day, Jacob criticized the proposal of Goldman and Gallese (1998) that mental simulation is allowed by processes of mirroring together with processes of imagination and pretence, so that the MN activity would support third-person mindreading abilities. Gallese and Goldman claim that MNs allow attributing beliefs both to forecast the future behaviour of an agent, and to explain its past behaviour. That is, the activity of MNs is both predictive and retrodictive. According to them,

the attributor starts with the question, 'What goal did the target have that led him to perform action *m*?' He conjectures that it was goal *g*, and tries out this conjecture by pretending to have *g* as well as certain beliefs about the effectiveness or ineffectiveness of the action *m vis-à-vis* goal *g*. This simulation leads him to form a (pretend) decision to do *m*. He therefore uses this result to conclude that the target did indeed have goal *g*. In this fashion, the attributor ultimately makes a 'backward' inference from the observed action to a hypothesized goal state (Gallese & Goldman 1998)

According to Jacob, instead, the proposal is unlikely because of the causal gap between action and belief. It seems that, starting from actions, we can predict other actions, but that we cannot attribute mental states. How might an observer attribute a belief only by watching an action? We cannot form a representation of the agent's intention from the perception of her movement. Therefore, Jacob claimed that it is more likely that the MN activity only predictively computes the best motor command suitable to satisfy the agent's intention.

Finally, Jacob examined the hypothesis that mirroring might be applied to understand emotions and affective states.

BIBLIOGRAPHY

- Gallese, V., Goldman, A. (1998). Mirror Neurons and the Simulation Theory of Mind-reading, *Trends in Cognitive Sciences*, 12, 493-501.