Simulation, Meaning and Identity

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The paper explores the consequences of Barsalou's understanding-bysimulation for event semantics and the identity of events. The first involve aspect, intention and causation. The second ties into with discourse structure and the division between additive and non-additive discourse relations.

Barsalou's understanding by simulation can be interpreted in a number of ways. A simple explanation is that simulations place actions into space, time and into the causal order to which human simulators have become adapted. The action should start somewhere in space and then unfolds in time propelled by standard causality allowing for certain disturbances. Space does not have square circles, time does not allow loops and causes predict the consequences by physical regularities, while nothing happens without a cause. The reconstruction of an action in a simulation therefore brings many constraints to bear on the action and enriches a purely conceptual characterisation of the action. That is a form of understanding in the sense of Stefan Frank and Harm Brouwer's microworlds in which the perception of logical structure includes experience based inference. Simulation of the actions of others is of great help in improving the accuracy of the perception of these actions. From the perspective of Bayesian interpretation, simulation is the best model of likelihood that can be imagined for the hypothesis of the other's action and can as such be what drives the search for the best hypothesis or the improvement of the current hypothesis in action perception. Action recognition is a highly non-trivial example of distal perception, since the necessary mental part of the action (its planning, volition and control) are not directly observable. At the same time, accuracy in recognising the action of others is vital for survival and anything that optimises the recognition skill will be selected in cognitive evolution. Likewise, simulating one's own future action is of great practical benefit, since it can reveal flaws and opportunities in one's plan and so increase success of one's action and thereby survival.

There is however a important third role of simulation, a role in semantics. This is best approached within a concept of meaning as in Kant's or Twardovski's concept of mental representation. Such mental representations can be true of the external world by the external world containing their external object or false by there being no such external object or only ones that are not represented by the representation. The representation however always has an internal object which it represents by definition and the question of truth or falsity can be reduced to one of comparing the internal object with the range of objects in reality that could be the external object of the representation. In terms of this picture, a simulation of an action is the most natural candidate for being the internal object of action concepts, both the

meanings of action verbs and the action concepts that naturally arise in making sense of the outside world.

The assumption that simulations are the internal objects of action concepts has important reflexes both on the nature of action concepts and on the nature of simulations. Action concepts must take into account the intentional side of the action, its goal, plan and control since this is what causes the action to start and what keeps it unfolding. Action concepts must further contain the causality in the execution as such. Inversely, what belongs and what does not belong to a simulation will be a matter of the concept: for any part of a simulation, there must be a component of the concept that would be simulated by that part. What is a simulation is therefore to a large extent a conceptual matter.

Simulations in perception, planning and in semantics are almost necessarily partial. The only exception to that could be the (perfect) memory of one's own action in the past. In all other cases, important parts are not given to the perceiver, the planner or the thinker. Yet a simulation can be further completed until the point that no more detail can be added. Any partial simulation allows many such completions and partial simulations can be understood as the class of such completions. If the simulation corresponds to an external event, the external event will determine a unique full simulation. This viewpoint makes it possible to say something about action identity. Two actions are identical iff their complete simulations are identical.

This is rarely the case on conceptual grounds alone when the actions have a different lexicalization. A possible example is buying and selling. Here each part of John selling some trousers to Bill is a part of Bill buying the trousers from John. Important are the cases where a concept is described analytically. E.g an agreement on something can be analysed as a proposal to agree on that by one party together with the (properly recognised) acceptance of that proposal by the other party. Simulations of the agreement than contain the proposal and the acceptance and simulations of the proposal and the acceptance are simulations of the agreement. A case where non-conceptual grounds come in is the following. John's going from A to B and John's running from A to B (if the going was effected by the running). This simulation-based account of action identity seems to help with identity puzzles about events.

A central one is the distinction between additive discourse relations such as narration and list versus the non-additive ones such as elaboration, reformulation and explanation. The second group may involve identities but more often it the weaker notion of entanglement tat is relevant: the simulation of either relatum crucially involves a partial simulation of the other, making the two actions non-distinct. Additivity requires full distinctness. The talk will elaborate on the semantical consequences of simulation for action concepts, including intentionality and perspective, using a couple of example verbs: give, climb, realise, propose and agree and provide a longer discussion of additivity.