Motor Simulation

Adam Morton
Department of Philosophy, University of Bristol, Bristol BS8 1TB, UK
Electronic mail: *adam.morton@bristol.ac.uk*

Many of the cases of motor imagery Jeannerod discusses are cases of simulation. That is, they involve a person rehearsing in their own mind an essential part of an action (as performed by another or more often by themselves.) They are simulation and not simple imagination just because they contain part of what would be involved in actual performance. Action simulation has been invoked by philosophers recently in explaining one person's intuitive knowledge of the what and why of another's behavior. (Heal 1986, Goldman 1992, Gordon 1992) According to the most straightforward such theory, that of Robert Gordon, one understands what another person is likely to do in a given situation by feeding into ones own action-guiding processes a specification of the situation and then running these processes 'off line'. Some of these processes are obviously concerned with deciding what action to perform; but others are directed at actually doing it. It is these latter processes that connect with the data discussed by Jeannerod. An example is the results in 4.3.2 of the target article in which the manner with which one grasps an object is determined by ones motor representation of the action which is to follow. Now consider an imaginary experiment in which one person S1 is predicting the actions of another S2 in a situation in which S2 will grasp an object - which can be done in two ways - intending to perform action A1, and then is faced with the need to perform a different action A2, which can be performed in manner M1 or M2. M1 depends on the grasp appropriate to A1 and M2 to some other natural aim. A simulationist will hold that S1 is likely to predict that S2 will perform M1 rather than M2, even when there is no reason to believe there is a verbal or spatial-imagistic representation of the grasp involved in A1.

One aspect to this connection that is worth emphasising is that if Jeannerod is right then some of the capacities that are needed to simulate another person are already in place in a creature that can mentally rehearse actions. In effect, there is a capacity to simulate oneself that can be transformed to be part of what is needed to simulate another. (In this connection see Ch 3 of Morton 1980.)

Everything here is controversial, though. It is not obvious that a capacity to simulate is not really a special case of a predictive theory, though the knowledge is tacit. This doubt has resemblances to the line sometimes taken in the debate over mental imagery, to the effect that images are really a special case of propositional knowledge. My suspicion is that this is a non-trivial analogy, and that issues about imagery and issues about simulation are very closely related.

References

Goldman, Alvin 1992: 'In defence of the simulation theory', *Mind and Language* **7**, 1 & 2, 104-119.
Gordon, Robert 1992 'The Simulation and the Theory Theory' *Mind and Language* 7, 1&2, 1-10.
Heal, Jane 1986 'Functionalism and Replication' in J. Butterfield, ed. *Language, Mind, and Logic* Cambridge University Press, 135-50.
Morton, Adam, 1980: *Frames of Mind*, Oxford University Press.