

Lecture 02: Intention and Motor Representation in Purposive Action

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1. Intention in the Philosophy of Action

‘The expression ‘the intention with which James went to church’ ... cannot be taken to refer to a ... state Its function ... is to generate new descriptions of actions in terms of their reasons; thus ‘James went to church with the intention of pleasing his mother’ yields a new, and fuller, description of the action described in ‘James went to church.’’ (Davidson 1963, p. 690)

The norm of *agglomeration* says it is a mistake to knowingly have several intentions if it would be a mistake to knowingly have one large intention agglomerating the several intentions; see Bratman (1987) or Setiya (2014, §4).

‘why should rational agents like us have the capacity to have both ordinary intentions (subject to demands for consistency and agglomeration) and guiding desires (which are not subject to these demands)?’ (Bratman 1987, pp. 137–8)

2. Motor Representation

Markers of motor representation

1. are unaffected by variations in kinematic features but not goals (e.g. Cattaneo et al. 2010; Umiltà et al. 2008; Cattaneo et al. 2009; Rochat et al. 2010)
2. are affected by variations in goals but not kinematic features (e.g. Fogassi et al. 2005; Bonini et al. 2010; Cattaneo et al. 2007; Umiltà et al. 2001; Villiger et al. 2010; Koch et al. 2010)

So:

3. carry information about goals (from 1,2)

Also

4. Information about outcomes guides planning-like processes (consider Grafton & Hamilton 2007; Jeannerod 1998; Wolpert et al. 1995; Miall & Wolpert 1996; Arbib 1985; Mason et al. 2001; Santello et al. 2002).

3. Motor Representations Ground the Directedness of Actions to Goals

4. Motor Representations Aren’t Intentions

Imagining seeing an object move and actually seeing an object move have similarities in characteristic performance profile (Kosslyn 1978; Kosslyn 1996, p. 99ff; Kosslyn et al. 1978)

The way imagining performing an action unfolds in time is similar in some respects to the way actually performing an action of the same type would unfold (Decety et al. 1989; Decety 1996; Jeannerod 1994; Parsons 1994; Frak et al. 2001)

Judging the laterality of a hand vs of a letter. For ordinary subjects, the tasks differ: they are less accurate when the hand’s position is biomechanically awkward. But Fiori et al. (2013) show that the tasks do not so differ for subjects suffering Amyotrophic Lateral Sclerosis (ALS), which impairs motor representation (Parsons et al. 1998).

1. Only representations with a common format can be inferentially integrated.
2. Any two intentions can be inferentially integrated in practical reasoning.
3. My intention that I visit the ZiF is a propositional attitude.

Therefore:

4. All intentions are propositional attitudes

But:

5. No motor representations are propositional attitudes.

So:

6. No motor representations are intentions.

5. The Interface Problem

The interface problem: explain how intentions and motor representations, with their distinct representational formats, are related in such a way that, in at least some cases, the outcomes they specify non-accidentally match.

Two collections of outcomes, A and B, *match* in a particular context just if, in that context, either the occurrence of the A-outcomes would normally constitute or cause, at least partially, the occurrence of the B-outcomes or vice versa. To illustrate, one way of matching is for the B-outcomes to be the A-outcomes. Another way of matching is for the B-outcomes to stand to the A-outcomes as elements of a more detailed plan stand to those of a less detailed one.

Imagine that you are strapped to a spinning wheel facing near certain death as it plunges you into freezing water. To your right you can see a lever and to your left there is a button. In deciding that pulling the lever offers you a better chance of survival than pushing the button, you form an intention to pull the lever, hoping that this will stop the wheel. If things go well, and if intentions are not mere epiphenomena, this intention will result in your reaching for, grasping and pulling the lever. These actions—reaching, grasping and pulling—may be directed to specific outcomes in virtue of motor representations which guide their execution. It shouldn't be an accident that, in your situation, you both intend to pull a lever and you end up with motor repre-

sentations of reaching for, grasping and pulling that very lever, so that the outcomes specified by your intention match those specified by motor representations. If this match between outcomes variously specified by intentions and by motor representations is not to be accidental, what could explain it?

'As defined by Tutiya et al., an executable concept of a type of movement is a representation, that could guide the formation of a volition, itself the proximal cause of a corresponding movement. Possession of an executable concept of a type of movement thus implies a capacity to form volitions that cause the production of movements that are instances of that type.' (Pacherie 2011, p. 7)

'Motor schemas are thus, we submit, what bridges the gap between intentions and motor representations, ensuring proper, content-preserving coordination without requiring any mysterious translation process.'

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