# Lecture 01: Intention and Motor Representation in Purposive Action

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## 1. Motor Representation

'a given motor act may change both as a function of what motor act will follow it—a sign of planning' (Cohen & Rosenbaum 2004, p. 294).

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; 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; 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; Mason et al. 2001; Santello et al. 2002).

## 2. 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; 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.

## 3. 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.

'both mundane cases of action slips and pathological conditions, such as apraxia or anarchic hand syndrome (AHS), illustrate the existence of an interface problem' (Mylopoulos & Pacherie 2016, p. 7).

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.

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