Lecture 09 : Philosophical Issues in Behavioural Science

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Contents

1. Introduction

This lecture introduces two interface problems which affect both philosophical and psychological theories of action as well as attempts to apply formalizable theories.

This lecture depends on you having studied some sections from a previous lecture:

- *Philosophical Theories of Action* in Lecture 01
- *Instrumental Actions: Goal-Directed and Habitual* in Lecture 01
- *Motor Representation* in Lecture 03

None of this lecture is required for the minimum course of study.

2. The Interface Problem: Motor Representation vs Intention

For a single action, which outcomes it is directed to may be multiply determined by an intention and, seemingly independently, by a motor representation. Unless such intentions and motor representations are to pull an agent in incompatible directions, which would typically impair action execution, there are requirements concerning how the outcomes they represent must be related to each other. This is the interface problem: explain how any such requirements could be non-accidentally met.

We have seen arguments for three claims about motor representation:

> Some motor representations represent outcomes rather than, say, only joint displacements and bodily configurations (see*Motor Representation* in Lecture 03).
>
> There are actions whose directedness to an outcome is grounded in motor representation (see*Motor Representations Ground the Directedness of Actions to Goals* in Lecture 03).
>
> Motor representation differs from intention with respect to representational format (see*Motor Representations Aren't Intentions* in Lecture 03).

A consequence of these claims is that a single instrumental action may involve representations of the outcomes to which it is directed in at least two different representational formats, motor and propositional. This leads to what we will call *the interface problem*, which this section introduces.

2.1. The Interface Problem

Realising it is rapidly going cold, you form an intention to drink the tea. Your hand expertly secures the mug and moves it to your mouth exactly as it opens. Nothing is spilled in these exquisitely coordinated movements.

As this illustrates, there are cases in which a particular action is guided both by one or more intentions and by one or more motor representations. In at least some such cases, the outcomes specified by the intentions match the outcomes specified by the motor representations. Furthermore, this match is not always accidental.

How do non-accidental matches between intention and motor representation come about? (This is The Interface Problem)

This question is a problem because of two natural routes to answering the question are unavailable. Appealing to common causes of intentions and motor representations is a non-starter; and appealing to content-respecting causal processes despite a lack of inferential integration between intentions and motor representations amounts to no more than a stab in the dark.

2.2. Background: Action Slips

action slips are actions that run contrary to intentions (Norman 1981). For instance:

> 'I was at the end of a salad bar line, sprinkling raisins on my heaping salad, and reached into my left pocket to get a five-dollar bill. The raisins knocked a coupleof croutons from the salad to the tray. I reached and picked them up, intending to pop them into my mouth. My hands came up with their respective loads simulta- neously, and I rested the hand with the croutons on the tray and put the bill in my mouth, actually tasting it before I stopped myself.' (Norman 1981, p. 10)

For a philosophers' perspective on action slips, see Mylopoulos (2022) (who also introduces many excellent scientific sources).

3. Preference vs Aversion: A Dissociation

Your preferences can be incompatible with your aversions (and thereby with primary motivational states). This shows that there is not a single system of preferences in rats or humans.

4. Interface Problems and the Role of Experience

5. Conclusion

In this lecture [...]

Glossary

action slip 'A slip is a form of human error defined to be the performance of an action that was not what was intended' (Norman 1981, p. 1). Examples include saying *canpakes* for *pancakes* or pouring coffee on to cereal. 3

aggregate subject A subject whose proper parts are themselves subjects. A paradigm example would be a Portuguese man o' war (Physalia physalis), which is an animal that can swim and eat and whose swimming and eating is not simply a matter of the swimming or eating of its constituent animals. Distinct from, but sometimes confused with, a plural subject. 5

inferential integration For states to be *inferentially integrated* means that: (a) they can come to be nonaccidentally related in ways that are approximately rational thanks to processes of inference and practical reasoning; and (b) in the absence of obstacles such as time pressure, distraction, motivations to be irrational, self-deception or exhaustion, approximately rational harmony will characteristically be maintained among those states that are currently active. 3

instrumental action An action is *instrumental* if it happens in order to bring about an outcome, as when you press a lever in order to obtain food. (In this case, obtaining food is the outcome, lever pressing is the action, and the action is instrumental because it occurs in order to bring it about that you obtain food.)

You may variations on this definition of *instrumental* in the literature. Dickinson (2016, p. 177) characterises instrumental actions differently: in place of the teleological 'in order to bring about an outcome', he stipulates that an instrumental action is one that is 'controlled by the contingency between' the action and an outcome. And de Wit & Dickinson (2009, p. 464) stipulate that 'instrumental actions are *learned*'. 2

match *[of outcomes]* Two collections of outcomes, A and B, *match* in a par-

ticular 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.

[of plan-like structures] In the simplest case, plan-like hierarchies of motor representations *match* if they are identical. More generally, plan-like hierarchies *match* if the differences between them *do not matter* in the following sense. For a plan-like hierarchy in an agent, let the *self part* be those motor representations concerning the agent's own actions and let the *other part* be the other motor representations. First consider what would happen if, for a particular agent, the other part of her plan-like hierarchy were as nearly identical to the self part (or parts) of the other's plan-like hierarchy (or others' plan-like hierarchies) as psychologically possible. Would the agent's self part be different? If not, let us say that any differences between her plan-like hierarchy and the other's (or others') are *not relevant* for her. Finally, if for some agents' plan-like hierarchies of motor representations the differences between them are not relevant for any of the agents, then let us say that the differences *do not matter*. 3

motor representation The kind of representation characteristically involved in preparing, performing and monitoring sequences of small-scale actions such as grasping, transporting and placing an object. They represent actual, possible, imagined or observed actions and their effects. 2, 3

plural subject Some subjects who are collectively the subject of an intention or other attitude. If there is one token intention that is both my intention and your intention and no one else's intention, then we are the plural subject of that intention. (The intention is therefore shared in the same sense that, if we were siblings, we would share a parent.) Distinct from, but sometimes confused with, an aggregate subject. 4

References

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