On the Interface Between Action Concepts and Intentions to Act

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One of the most interesting issues in the contemporary philosophy of mind is determining how *intentions* relate to *motor representations* (henceforth: MRs). On the one hand, both intentions and MRs are mental components of action, on the other, they are built in different formats. Intentions are usually conceived as having a *propositional, sentence-like format* (e.g., Butterfill and Sinigaglia 2014: 130; Bratman, 1989; Mele, 1992). For this reason, they can be featured as premises or consequences of a piece of practical reasoning. Differently, MRs are built in a *motor format* (e.g., Jeannerod 2006; Butterfill and Sinigaglia, 2014). This is for a simple reason: MRs allow us to properly represent all the motor aspects of a specific action in a given motor situation. Only a motor format allows representing all the visuomotor, biomechanical and kinematic aspects of action that have to be satisfied in order to obtain the proper motor performance (Butterfill and Sinigaglia, 2014: 130; Jeannerod 2006; Jacob and Jeannerod 2003; Ferretti 2016b; Zipoli Caiani and Ferretti 2017; Levy 2017; Fridland 2017). It is commonly assumed, indeed, that the propositional format of our intentions does not allow us to represent, with a high degree of specificity, such specific and fine-grained motor parameters that we need to specify for motor action to properly unfold (Butterfill and Sinigaglia, 2014; Shepherd 2017; Burnston 2017).

To this extent, standard accounts assume that a full explanation of the purposiveness of actions requires coordination between intentions and MRs, so that it is possible to proceed from the representation of the former to the representation of the latter (Bach, 1978; Searle, 1983, Mele, 1992, Pacherie, 2000; Shepherd 2017: Sect. 1; Burnston 2017: Sect. 2; Brozzo 2017). However, the philosophical enterprise involved in offering such an explanation has to face a crucial issue: since intentions and MRs have different formats, it is not clear how we can explain the way in which they interlock. How can the motor format of MRs and the propositional format of intentions interlock? This question is at the basis of a crucial problem known as the *interface problem*, and has been recently addressed by prominent authors in the field of philosophy of mind (e.g., Butterfill and Sinigaglia, 2014; Mylopoulos and Pacherie, 2016; Shepherd, 2017; Burnstone, 2017). This problem can be stated as follows:

The Interface Problem: how do intentions, which are built in a propositional format, and MRs, which have a motor format, interlock?

According to Butterfill and Sinigaglia (2014), one way to explain the relation – and, thus the interlocking – between intentions and MRs is by recognizing that while they have different formats, their contents interlock because the former can be partially determined by the latter. In particular, Butterfill and Sinigaglia (henceforth, B&S) propose that the interlock between intentions and MRs is explained by the fact that an intention can have constituents that refer to the action outcome by *deferring* to the MR of precisely this outcome, so the content of the intention and the content of MR may concern the motor outcome of the action (Ibid.: 120).

More recently, Mylopoulos and Pacherie (2016) (henceforth, M&P) argued that B&S do not solve the interface problem satisfactorily, and, according to their view, a full explanation of how intentions and MRs interlock should involve an appeal to *executable action concepts* and *motor schemas.* Notably, they propose that to interface with MRs, intentions must have *executable action concepts* as their constituents, and there must be *motor schemas* as the intermediary connections between the action concepts and the outcomes of the actions.

In this paper, we propose a new account concerning the interlock between intentions and MRs, showing that the *interface problem* is not as deep as previously proposed. Before discussing our view, we report the ideas developed in the literature by those who have tried to solve this puzzle before us. The paper proceeds as follows, first we address the views by B&S and M&P, respectively, and argue that both solutions entail a *translation* between representational formats, which both accounts aim to avoid. Then, we present our brand new claim, according to which intentions and MRs partially share the same motor format, inasmuch as executable action concepts are naturally represented in the agent's motor system together with the action's outcomes. Indeed, since intentions are constituted by *executable action concepts*[1] and since there is evidence that action concepts are represented (and, thus, built) in the same motor format as action outcomes, the interlock between intentions and MRs no longer constitutes a problem. Finally, we report empirical evidence in support of our claim, and before concluding, we offer some remarks about the philosophical idea defended here.

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1   It should be noted that concepts are here considered as psychological entities with a representational function, but also as basic components of propositions. Accordingly, for the sake of our argument, we assume that action concepts are symbolic items embedded in propositional intentions, which refer to the planning or execution of a goal-directed motor plan.

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