For more than 30 years now, two camps have been arm-wrestling about the place of representations in cognitive science. Radicals claiming that no representations whatsoever are deployed in biological systems in their everyday lives on the one side, radicals claiming that strict formal computation is all there is to cognition on the other side, and many other thinkers taking intermediate positions.

However, “representation” battles are seldom fought around the notion itself. Different answers to the question “how would the cognitive system benefit from deploying representations?” are provided according to different cognitive aspects or phenomena under observation. Thus, it has been claimed that while some phenomena could do well with non-representational explanations, others are more “representation hungry”. The problem with this ecumenic solution is that it owes an explanation of how such different cognitive solutions as those implied by representational and nonrepresentational mechanisms can cohabit harmoniously in, say, the brain, and be implemented by the same physical resources.

As an answer to this problem, one tradition among non-representationalists has been to focus on so-called “low level cognition” and to try to incrementally build increasingly complex models of cognition without having to appeal to representational mechanisms. As it turns out, of course, “low-level” does not mean “simple”. This is especially true in the case of adaptive behavior, since it presents the particular characteristic of having to cope with a changing environment, in real time, through the coordination of bodily activity, and in a flexible and meaningful way. Interestingly, this degree of complexity rather than systematically driving research towards representational solutions has proven a very fertile ground for the research of deeply interesting non-representational mechanisms that are far from trivial, contrary to what the notion of “low-level” would imply. Moreover, there is reason to think the non-representational mechanisms of behavior could underlie the phenomenon of cognition itself. Adaptive behavior would not be merely an end-product of cognitive processes (“output”), but cognition could be grounded--if not *consist*--in the very ongoing shaping of those sensorimotor patterns. However, there is not a consensus on the interpretation of these mechanisms as non-representational, thus the question always requires considerable philosophical efforts to make sense of the relation between behavior, cognition and representation.

This symposium aims to update the current state of research in behavioral phenomena and to make progress in the elucidation of the role of representations in the face of recent developments. The talks will address the following topics : the consequences of considering behavioral systems as agent-body-environment systems ; the relationship between representational states and properties of dynamical flows describing the evolution of behavior ; navigation through action-orienting recognition instead of place recognition ; how to design controllers for tensegrity-based locomoting bodies ; an interpretation of off-line cognition from a movement coordination perspective ; contrasting the notion of ‘agent’ with the notion of ‘organism’ as cognitive systems and how each notion places a different emphasis on representation ; dynamic behavior based origins of life ; mechanisms for muscle coordination

and the possibilities of their being constituent of the rest of cognition ; defense of the use of representations to understand motor control.