A criticism of the recent explanations for the embedded and embodied nature of cognition

Hsi-wen Liu

The embedded and embodied nature of cognition has been noticed in the 1990s, and has gradually more discussions in philosophy. Discussions centre around the idea that *representations* are dispensable to a certain extent in the modelling and explanation of cognition (Varela *et al.* 1991, Hendriks-Jansen 1996, Clark 1997, Keijzer 1998, Wheeler and Clark 1999). Recently, discussions of this nature proceed to explaining the mechanisms of organisms' *adaptive flexibility* in the ecological niche. The embedded characters of cognition are subtly explored in the notion of `ecological rationality' (Bullock and Todd 1999, *Minds and Machines*, pp. 497-541). An interactive-constructive (I-C) approach to modelling intelligence is recently raised, to take into account the dynamical embodied form of adaptiveness (Christensen & Hooker 2000, *Philosophical Psychology*, pp. 5-45). This project follows the above trend of discussion but criticises the discussions of organisms' adaptive flexibility.

My primary target is Christensen & Hooker's (2000) vague account, against which I will criticise that it begs the question: how is their notion of a `capacity of coherent, context-sensitive, self-directed management of interaction' carried out on the basis of simple automata? To answer this question will this project argue that the embodied dynamics of cognition is maintained through the recurrent loops of external assessment and internal modification, with a view to manifesting the autopoietic unity of a system's factors, which is originally evident in the maintenance of life (Morán *et al.* 1997). `Interactive skill construction' is a notion to which Christensen & Hooker (2000) resort in support of the process of `anticipative skill construction'. At this point they also beg a question: how is *self-directed anticipation* constructed if no notion of *self* can be presumed in the cognitive systems? While Christensen & Hooker (2000) see their account as a primary model for cognitive learning, instead will I research in the context of perception, where no obvert functionality of self-control is as evident as learning. With this research will I put their notion of self-directed anticipation in a better profile of explanation.

My explanation will be cast in terms of stepwise exploitation of environmental information on the basis of inherent *a priori* representations of the ecological niche. Related to such terms an amount of foundational conceptions have been established in my doctoral dissertation, while amazingly reappear lately in Bullock and Todd (1999) with significant evidence in a different domain, decision-making, in contrast to my previous work on perception.

Largely against the aforementioned trend of embodied and embedded approach to cognition, but responding to Wheeler and Clark (1999), in this project will I argue for the importance of representations in the embodied and embedded capacities of cognition. On the top of Wheeler and Clark (1999), the previous discussion in this project has provided significant amount of argument, which would in turn bridge a link between representation and the embodied and embedded characters of cognition. With the above argument, this project will criticise Christensen & Hooker (2000) and consequently help the aforementioned trend of embodied and embedded cognition to move ahead.