

**Animat Mechanicalism:
On the Mechanisms of Interaction between
Cognitive Architectures and the Environment**

Hsi-Wen Liu

Abstract

As yet, mechanicalism has not accounted for cognitive adaptation at the *task* level, although Darwinian evolutionary biology has made available significant understandings as to the adaptation of organism traits at the evolutionary level. The present paper, based on a case study of *active perception*, will fill this gap, by providing a mechanicalist account of task-level cognitive adaptation, through the notion of *incremental adaptation*. This notion is constructed on the basis of algorithms of three active perception systems: attentive control of saccades, Kalman filter implemented in navigation systems, and Dickmanns' car. Such a notion will replace the traditional "clock" metaphor of mechanicalism, and stand as a novel prototype of understanding for explaining Complex Adaptive Systems. The present account, beyond traditional epistemology, obviates a subject-object dichotomy for understanding the world, and instead puts the world in the context of organism-environment interaction. This paper also provides a complement to Wheeler and Clark (1999), which is a recent endeavour at integrating internal and external cognition.

Key Words: mechanicalism, animat research, complex adaptive systems, adaptation, environment