Editor's foreword for: Bach, J. (2009). *Principles of synthetic intelligence: Building blocks for an architecture of motivated cognition.* v-vi. New York, NY: Oxford University Press**. In the *Oxford Series on Cognitive Models and Architectures***
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In this book Joscha Bach introduces the MicroPSI architecture, an integrated model of the mind. It is a broad and shallow architecture based on situated agents. It implements Dietrich Dörner's PSI theory.

MicroPSI has several lessons for other architectures and models. Most notably, the PSI architecture includes drives and thus directly addresses questions of motivation, autonomous behavior, and emotions. MicroPSI suggests how emotions arise, and how drives and emotions are different. Including drives also changes the way that the architecture works on a fundamental level, providing an architecture suited for behaving autonomously, which it does in a simulated world. PSI includes three types of drives, physiological (e.g., hunger), social (i.e., affiliation needs), and cognitive (i.e., reduction of uncertainty and expression of competency). These drives routinely influence goal formation and knowledge selection and application. The resulting architecture generates new kinds of behaviors, including context dependent memories, socially motivated behavior, and internally motivated task switching. This architecture illustrates how physiological drives and emotions can be included in an embodied cognitive architecture.

The PSI architecture, while including perceptual, motor, learning, and cognitive processing components, also includes several novel knowledge representations: temporal structures, spatial memories, and several new information processing mechanisms and behaviors, including progress through types of knowledge sources when problem solving (the Rasmussen ladder), and knowledge-based hierarchical active vision. These mechanisms and representations can also help make other architectures more realistic, more accurate, and easier to use.

The architecture is demonstrated in a simulated environment, which was carefully designed to allow and require multiple tasks to be pursued and provides ways to satisfy the multiple drives. It would be useful in its own right for developing other architectures interested in multi-tasking, long-term learning, social interaction, embodied architectures, and related aspects of behavior that arise in a complex but tractable real-time environment.

The resulting models are as theoretical explorations in the space of architectures for generating behavior. The sweep of the architecture can thus be larger than for models of single experiments currently common in cognitive model. MicroPSI presents a new cognitive architecture attempting to provide a unified theory of cognition. It attempts to cover perhaps the largest number of phenomena to date. This is not a typical cognitive modeling work, but one that I believe that we can learn much from.

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