

# **Cognition in Flux**

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The slogan “Cognition in Flux” was chosen to emphasize two points. First, cognitive research is to a large extent research into how cognition changes over time. Second, the field of cognitive research – our shared theoretical vocabulary and our repertoire of research practices -- is itself continually changing. Both points are well illustrated by the content of program for the 2010 meeting of the Cognitive Science Society.

Explaining change is a central enterprise in the cognitive sciences. We received approximately 850 submissions, covering all areas of cognitive research. The majority of those submissions focused on cognitive change in some form, whether it be through models of subsymbolic learning, developmental studies of word learning, experimental evaluation of training procedures, classroom studies of instructional techniques, or through models of brain-like computations.

The fact that cognitive science itself is changing is equally evident in the submissions. Perhaps the most stunning trend over the past three decades is the dissemination of cognitive science concepts, techniques and results to all areas of study that pertain to humans, social entities and computational entities. From its core concerns with memory representations, processing limits and problem solving strategies 30 years ago, the perspective of cognitive science has rolled outwards in an ever widening circle to reach areas of inquiry that were once thought to lie outside its reach. The 2010 program included papers that presented cognitive perspectives on blame and punishment, the explanatory coherence of religious thought and the detection of fraud in corporate email networks, to mention only a few of the topics that would have raised eyebrows three decades earlier.

The labels for sessions and tracks that emerged out of the pool of accepted papers reflected this widening ring of influence. We had, for the first time, a track on Social Cognition; with deliberate provocation, we included the session on Human-Robot Interaction in that track. Another interesting trend is that work on perception and action, the input-output devices relegated to the periphery of the cognitive system in the first decades of cognitive science, has migrated towards the center of focus. This trend was represented by multiple sessions on perception or action, and by several of the symposia. Another remarkable feature of the 2010 program is the extraordinary attention paid to issues regarding language. The entire track B and all but the first two sessions of track A were devoted to research on various aspects of language, and even so the topic of language spilled over into sessions in other tracks.

As the stock of research topics grows broader, the repertoire of research techniques grows also. This is necessarily so. A viable scientific enterprise does not define itself by its methods but by its questions. Methods are tools, and as the research questions morph, so do the tools for answering them. There was much evidence for the evolution of tools in the 2010 program. The Internet provides new ways of collecting data, and ways of collecting new types of data. New computational techniques are applied to reverse

engineer the mental representations of experimental subjects. New modes of analyses reveal novel phenomena. If we had any bias in organizing the program, it was a bias against basing sessions and tracks on the similarity of methods in favor of basing them on the similarity of research questions. Hence, there were no tracks on Bayesian models, studies of children or the use of eye movement recordings. Instead, papers that included Bayesian models, observations on children or eye movements were sorted with other papers that addressed the same or some conceptually related research question.

Of the approximately 850 submissions, 270 or 30 % were included in the program as talks. The two poster sessions on Thursday and Friday afternoon included more than 200 posters each. Papers and abstracts are included in full in these proceedings. The program also featured invited talks, tutorials, workshops and symposia. The latter are listed. We hope that the Proceedings will serve as a useful collection of cutting-edge papers.