

# Preface

Social science is moving in a direction in which its various constituent parts are sharing a common set of foundations, languages, and platforms. This commonality is making the social sciences unprecedentedly behavioral, algorithmic, and computational. At the turn of the twenty-first century, a group of computer scientists and social scientists worked together to initiate new series of conferences and to establish new academic organizations to give momentum to this emerging integration now known as computational social sciences. One of them is the International Workshop on Agent-Based Approaches in Economic and Social Complex Systems (AESCS), which originated in Japan. The first five AESCS workshops were all organized in Japan – Shimane (2001), Tokyo (2002), Kyoto (2004), and Tokyo (2005, 2007). The sixth was the first one to be held outside Japan. It was hosted by National Chengchi University in Taipei, Taiwan, and co-hosted by the Pacific-Asian Association for Agent-Based Approaches in Social System Sciences (PAAA) as its biennial conference.

On the occasion of AESCS'09 we had 39 presentations, which were delivered in single sessions on November 13 and 14, 2009. In addition to the regular presentations, three keynote speeches were given, by Jeffrey Johnson (Open University, UK), Sobei Oda (Kyoto Sangyo University, Japan), and Takao Terano (Tokyo Institute of Technology, Japan). While most of the time the “agent” in agent-based modeling refers to software agents, the increasing involvement of human agents and their interactions with software agents has given agent-based social modeling a new direction to explore, which is known as experimental agent-based modeling or participatory simulation. To feature this new development, AESCS'09 also offered a one-day tutorial on software for software-agent simulations and human-subject experiments. The tutorials included SOARS (lectures by Hiroshi Deguchi, Manabu Ichikawa, and Hideki Tanuma), Netlogo (Bin-Tzong Chih) and z-Tree (Chung-Ching Tai).

As in the previous five events, we also prepared a post-conference publication to archive selected papers as evidence of the advances in computational social sciences. Fourteen papers were selected to be included in this volume, each being reviewed by three to four referees. These 14 papers were then further grouped into six parts. Of these, Part I, “Agent-Based Financial Markets,” and Part II, “Financial Forecasting and Investment,” have long-standing positions in the literature.

We believe that these two topics will continue receiving attention from scholars as well as the general public, particularly after the recent financial tsunami. Part III, “Cognitive Modeling of Agents,” is a new direction in agent-based social sciences. Cognitive capacity, as well as other related measures, has been studied by cognitive psychologists for decades. However, only recently has this constraint sensibly been taken into account in constructing artificial agents so as to, from a microscopic viewpoint, better mimic the human behavior observed in, for example, human-subject experiments, or, from a macroscopic viewpoint, to better understand the emergent complex phenomena. The two chapters included in this part are examples of this kind of work.

Agent-based models of complex adaptive systems obviously provide an alternative way of thinking about policy making in a complex and uncertain environment. The flexibility of agent-based models provides us with tremendous opportunities for policy simulation under various scenarios, from the behavior of stakeholders and interaction networking to environmental uncertainties. This information regarding the landscape of outcomes can be particularly useful in evaluating the potential risk of policy regimes. The three chapters included in Part IV, “Complexity and Policy Analysis,” address policies related to pension funds, local taxes, and marketing.

Needless to say, all great challenges currently facing primates and human societies are interdisciplinary. The solutions require not just technology, but also fence crossing among the various social sciences. Agent-based modeling as an integration platform within the social sciences is becoming active in tackling these challenges. Part V, “Agent-Based Modeling of Good Societies,” is an example of this development. The three chapters included in this part use agent-based modeling to address the issues of human well-being: peace, greenness, and disaster management, respectively. The remaining two chapters are included in Part VI “Miscellany,” which extends the volume to applications to organizations and management and a literature review of the computational social sciences.

We do hope that this volume (AESCS’09), as a continuation of the past decade and the opening of a new decade, can stimulate and motivate more prospective readers, particularly young scholars, to join this growing and exciting area and contribute to the flourishing development of the computational social sciences.

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