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Logic and Interaction: Foreword to the Special Issue

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This volume contains extended versions of six papers presented at the Seventh International Conference on Logic, Rationality and Interaction (LORI-VII), which took place at South-West University in Chongqing (China) from October 18 to October 21, 2019 (for the complete conference proceedings, see Blackburn et al. 2019).

The aim of the LORI conference series is to strengthen the interface between logic, epistemology, game theory, and social theory using perspectives drawn from philosophy, computer science, and artificial intelligence. Its topics of interest include (but are not limited to) epistemic logic, logic of/for games, computational social choice, logic of preference, deontic logic, logic of agency, conditional logic, logic and natural language, and argumentation theory.

The papers included in this special issue all put special emphasis on "logic and interaction" and together offer a broad overview of ongoing research on this topic in both philosophy and in computer science. The papers address a number of themes, including the dynamics of distributed knowledge in multi-agent systems, strategic reasoning of rational agents in concurrent games, the formation of friendship and enmity relations in social networks, the connection between logic and supervised learning, the logical theory of causality, and the logic of knowledge and belief. To give a little more detail, the six selected papers are as follows:

Logics with Group Announcements and Distributed Knowledge: Completeness and Expressive Power by Thomas Ågotnes, Natasha Alechina, and Rustam Galimullin.

This paper extends group announcement logic (GAL) by allowing quantification over announcements made by agents. Intuitively, such announcements (which may be joint) are related to the notion of distributed knowledge. Surprisingly, however, the paper shows that there are no interaction properties between GAL operators and distributed knowledge. The paper also investigates a number of other variants of GAL.

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A Logic for Conditional Local Strategic Reasoning by Valentin Goranko and Fengkui Ju.
This paper formalises reasoning about the expected choices of action of other agents based on their objectives. It does so by extending Pauly's Coalition Logic with three new modal operators of conditional strategic reasoning. The paper defines their semantics and bisimulation conditions, and proves bisimulation invariance and Hennessy-Milner results. The paper also proposes axioms for the three operators and for the full logic.

Who Should Be My Friends? Social balance from the perspective of game theory by Wiebe van der Hoek, Louwe B. Kuijer, and Yì N. Wáng.
This paper defines balance games to describe the formation of friendship and emnity in social networks. It then shows that when agents prioritise future profits over short term games, all Pareto optimal strategies will eventually yield a balanced network. On the other hand, when the reverse prioritisation is made, every Nash equilibrium eventually results in a network that is stable, but may not be balanced.

A Modal Logic for Supervised Learning by Alexandru Baltag, Dazhu Liand, and Mina Young Pedersen.
Formal learning theory formalises the process of inferring a general result from examples; this paper studies the interaction between formal learning theory, graph games, and logic. To this end it develops a general framework-the supervised learning game-to investigate the interaction between Teacher and Learner. Then, in order to reason about strategies in the game, it develops a modal logic of supervised learning and studies its properties.

Non-strict interventionism: The case of right-nested counterfactuals by Katrin Schulz, Sonja Smets, Fernando R. Velázquez-Quesada, and Kaibo Xie.
A recent challenge to the interventionist approach to the semantics of counterfactual conditionals claims that it cannot account for the interpretation of right-nested counterfactuals. This paper reports on an empirical study supporting the objection. It also extends the well-known logic of intervention with an operator expressing an alternative notion of intervention that does away with strict interventionism—thus coping with some critical examples.

Model Theoretical Aspects of Weakly Aggregative Modal Logic by Jixin Liu, Yifeng Ding, and Yanjing Wang.
Weakly Aggregative Modal Logic (WAML) has applications in epistemic logic, deontic logic, and the logic of belief; this paper is devoted to studying its model theoretical properties. It provides a van Benthem-Rosen style characterisation theorem, and then shows that each basic WAML system Kn *lacks* Craig interpolation. An extension of K2, on the other hand, is shown to possess it.

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Reference

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