

## Tsinghua Seminar on “Logic in the Community”

**课程的一般介绍：**当我们考虑主体间交互的时候，理性行为的复杂性变得特别显著。传统的逻辑更多关注单个主体的知识或信念，而逻辑近年来的发展开始研究多主体的系统。公共知识、战略性的博弈和交流的动态性等问题得到更多的关注。特别的，主体之间的社会关系在信息交互中的作用也受到研究者的重视。这一扩展使得逻辑的研究能够更富有成效地处理社会科学（如理论经济学）中的一些问题。

本课程从引论到逻辑技术细节、系统介绍这一领域的最新发展。课程介绍如何用形式语言表示社会关系，例如，朋友、导师或学生等，并从逻辑的角度研究它们在社会交互推理中扮演的角色。

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General Introduction: Much of the depth and complexity of rational behaviour emerges only when one considers interactions between agents. Yet logic, with its traditional focus on the justification of an individual's beliefs, has only recently been adapted to a multi-agent setting, in which concepts such as common knowledge, strategic game-playing, and the dynamics of communication can be addressed. The broadening of the subject allows research in logic to engage productively with related areas of social science such as theoretical economics.

This series of lectures will focus on a recent development of this trend, in which relevant social relationships such as `friend', `trusted advisor', or `student' are explicitly represented in formal languages, so that their role in reasoning in social settings can be studied.

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**第一次课: Logic in the Community**  
**时间:** 11月30日(周五)下午 1:30-4:00  
**地点:** 清华大学6教B407

**内容简介:** We will introduce the topic with a number of examples in which social relationships play a role in reasoning and indicate the broad framework used to study them. This is followed by an application, in more detail, to modelling the effect of peer pressure on the dynamics of preference change within a community.

**参考文献:** SELIGMAN, J.M; GIRARD, P.; LIU, F., 'Logic in the Community', In Banerjee, M. and Seth, A. (eds.), Proceeding of the Fourth Indian Conference

in Logic and Applications, Springer LNAI 6521, p178-188, 2011.

ZHEN, L; SELIGMAN, J.M., 'A logical model of the dynamics of peer pressure',  
Electronic Notes in Theoretical Computer Science, Volume 278, 3 November  
2011, pp. 275-288, ISSN 1571-0661,  
10.1016/016/j.entcs.2011.10.021. (<http://www.sciencedirect.com/science/article/pii/S1571066111001496>)

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**第二次课: Belief Influence**

**时间:** 12月10日(周一)下午 1:30-4:00

**地点:** 清华大学新斋 346

**内容简介:** Belief revision is the process by which one changes one's beliefs in response to new information that may conflict with what one now believes. In the past thirty years, norms of belief revision have been studied extensively by logicians and computer scientists. We ask how one can adapt existing ideas about belief revision to a social setting in which the relationships of epistemic trust between agents are modelled explicitly. Like the study of peer pressure, this produces interesting dynamic behaviour.

**参考文献:** SELIGMAN, J., GIRARD, P; LIU, F. 'Logical dynamics of belief change in the community' under review with Synthese. Preprint:  
<http://auckland.academia.edu/JeremySeligman/Papers/1886776>

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**第三次课: General Dynamic Dynamic Logic**

**时间:** 12月14日(周五)下午 1:30-4:00

**地点:** 清华大学 6 教 B407

**内容简介:** The previous lectures focussed on the phenomena to be explained and formal languages used to do so. We omitted much of the technical development needed for to make all of this precise. In this lecture, we introduce a framework for doing applied dynamic logic that generalises existing approaches, such as Dynamic Epistemic Logic.

**参考文献:** GIRARD, P; SELIGMAN, J.M; LIU, F., 'General Dynamic Dynamic Logic', in Bolander, T.; Braüner, T.; Ghilardi, S.; Moss, L.; (eds), Advances in Modal Logic, Volume 9, College Publications, pp. 239--260, 2012.

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**第四次课: The Epistemic Logic of Friendship**

**时间：**12月21日（周五）下午 1:30-4:00

**地点：**清华大学 6 教 B407

**内容简介：** Our central examples of reasoning about social relationships concerns such everyday topics as office gossip, asking questions of friends in a social network, and, more darkly, the dangers of being friends with a spy. In this final lecture, we examine these in much greater detail, drawing numerous epistemological distinctions that only become apparent when looking at the social nature of communication.

**参考文献：** SELIGMAN, J.M; LIU, F.; GIRARD, P, 'Facebook and the epistemic logic of friendship', to appear in the Proceeding of TARK 2013, the Fourteenth conference on Theoretical Aspects of Rationality and Knowledge.