"Workshop on Dynamic Networks"

December 15th 2014, Centre d'Economie de la Sorbonne

106-112 Boulevard de l'Hôpital, Paris, ***room: 117***

PROGRAM

9:15 – 9:30	Welcome & coffee
9:30 – 10:20	Anne van den Nouweland (*University of Oregon*)
	"Expectation Formation Rules and the Core of Partition Function Games"
	(joint with Francis Bloch)
10:20 – 11:10	Francesco Feri (*Royal Holloway University of London & Università di Trieste*)
	"An Experimental Study on Information Sharing Networks"
	(joint with Sergio Currarini and Miguel A. Meléndez-Jiménez)
11:10 – 11:30	Coffee break
11:30 – 12:20	René van den Brink (*VU University, Amsterdam*)
	"Stable Standards of Behavior in Exercising Veto Power"
	(joint with Rob Gilles)
12:20 – 14:00	Lunch (for registered participants)
14:00 – 14:50	Frédéric Deroïan (*CNRS – GREQAM*)
	"Contracting on Networks" (joint with Mohamed Belhaj)
14:50 – 15:40	Sylvain Béal (*Université de Franche-Comté*)
	"Characterization of the Average Tree Solution and its Kernel"
	(joint with Eric Rémila and Philippe Solal)
15:40 – 16:00	Coffee break
16:00 – 16:50	Yukio Koriyama (*Ecole Polytechnique*)
	"The Condorcet Jury Theorem under Cognitive Hierarchies: Theory and Experiments" (joint with Ali Ihsan Ozkes)

16:50 – 17:40 Michel Grabisch (*Paris School of Economics, University of Paris 1*)

"On Strategic Formation of Influence Networks" (joint with Antoine Mandel, Agnieszka Rusinowska and Emily Tanimura)

19:30 – Workshop Dinner (on invitation)

Organizers: Francis Bloch, Michel Grabisch, Agnieszka Rusinowska

Participation: Registration for participation is compulsory. If you like to participate in the meeting, please contact agnieszka.rusinowska@univ-paris1.fr by ***December 1st 2014.***

The workshop is sponsored by:

- Labex OSE (*Ouvrir la Science Economique*) – DT4 (*Fondements des comportements individuels, stratégiques et sociaux*) http://www.opening-economics.com/recherche/fondements-des-comportements-individuels-strategiques-et-sociaux/
- ANR (National Agency for Research / Agence Nationale de la Recherche), Project *DynaMITE* (*Dynamic Matching and Interactions: Theory and Experiments*, ANR-13-BSH1-0010-01) https://sites.google.com/site/anrdynamite/home

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ABSTRACTS

Anne van den Nouweland (*University of Oregon*)

"Expectation Formation Rules and the Core of Partition Function Games"

This paper proposes axiomatic foundations of expectation formation rules, by which deviating players anticipate the reaction of external players in a partition function game. The projection rule is the only rule satisfying subset consistency and responsiveness to the original partition of non-deviating players. It is also the only rule satisfying subset consistency, independence of the original partition of deviating players, and coherence of expectations. Exogenous rules are the only rules satisfying subset consistency and independence of the original partition, and the pessimistic rule is the only rule generating superadditive coalitional games.

Francesco Feri (*Royal Holloway University of London & Università di Trieste*)

"An Experimental Study on Information Sharing Networks"

We design an experiment to study how agents make use of different pieces of information in the lab, depending on how many others have access to them and the strategic nature of interaction. Agents receive signals about a payoff relevant parameter, and the information structure is represented by a non directed network, whose nodes are agents and whose links represent sharing agreements. We compare the use of information in different information sharing networks, considering games in which strategies are substitute, complement and orthogonal. We then study the incentives to share information across games by analyzing the scenario where subjects have the chance to modify the network prior to playing the game.

René van den Brink (*VU University, Amsterdam*)

"Stable Standards of Behavior in Exercising Veto Power"

We consider the problem of the exercise of authority within social production organizations, embedding the decision makers into a structure of formal authority relationships. We distinguish two types of behavior. First, we introduce an equilibrium notion implementing latent authority under which subordinates submit themselves to authority even though such authority is not enforced explicitly. Second, we compare this with a non-cooperative equilibrium concept describing explicit exercise of authority. We show that for low enough enforcement costs both forms of authority will be exercised in equilibrium, but for higher enforcement costs latent authority will be exercised while explicit authority will not.

Frédéric Deroïan (*CNRS – GREQAM*)

"Contracting on Networks"

A principal offers bilateral contracts to a set of agents organized in a network of local complementarities, in a context where agents' efforts are observable and where the principal's objective increases with the sum of efforts. We develop two alternative scenarios. Either non contracting agents are excluded from the network, or alternatively they still belong to the network. In both cases, we characterize optimal contracts as a function of agents' positions on the network. We also examine the implementability of optimal contracts and we analyze the situation where the principal is constrained to contract with a single agent on the network. Overall, the study suggests that the impact of the network structure on optimal contracting strongly depends on the considered scenario.

Sylvain Béal (*Université de Franche-Comté*)

"Characterization of the Average Tree Solution and its Kernel"

In this article, we study cooperative games with limited cooperation possibilities, represented by a tree on the set of agents. Agents in the game can cooperate if they are connected in the tree. We first derive direct-sum decompositions of the space of TU-games on a fixed tree, and two new basis for these spaces of TU-games. We then focus our attention on the Average (rooted)-Tree solution (see Herings, P., van der Laan, G., Talman, D., 2008, The Average Tree Solution for Cycle-free Games, Games and Economic Behavior, 62, 77-92). We provide a basis for its kernel and two new axiomatic characterizations by using either the classical axioms of Covariance and Null game, or the Inessential game axiom, and two new axioms of invariance, Invariance with respect to irrelevant coalitions and Weighted addition invariance on bi-partitions, respectively.

Yukio Koriyama (*Ecole Polytechnique*)

"The Condorcet Jury Theorem under Cognitive Hierarchies: Theory and Experiments"

Cognitive hierarchy models have been developed to explain systematic deviations from the equilibrium behavior in certain classes of games. This paper introduces an endogenous cognitive hierarchy model, which better explains the behavioral heterogeneity of the strategies in games for which the standard cognitive hierarchy model provides an unreasonable prediction. As in the previous models, each player in the endogenous cognitive hierarchy model is assumed to best-reply to the other players holding a belief induced by the cognitive hierarchy. Contrary to the previous models, however, players are allowed to consider the presence of opponents at their own level of cognitive hierarchy. This extension is shown to eradicate the incompatibility of cognitive hierarchy models in the classes of games. We employ the model to explain voting behavior in information aggregation problems of the Condorcet Jury Theorem. Behavioral assumption of the strategic thinking turns out to be a crucial factor in whether the asymptotic efficiency is obtained or not. We conducted laboratory experiments which show that the endogenous cognitive hierarchy model provides significant improvements upon symmetric Bayesian Nash equilibrium and the previous cognitive hierarchy models in explaining the observed behavior of voters.

Michel Grabisch (*Paris School of Economics, University of Paris 1*)

"On Strategic Formation of Influence Networks"

We consider a set of n non-strategic agents, characterized by a vector of opinions, where an opinion is a number in [0, 1]. These agents are permanently linked through a strongly connected network, and each agent updates his opinion by taking the average of the

opinions of his neighbors (De Groot model). Moreover, we consider two strategic agents with fixed opinions 1 and 0. Each strategic agent chooses exactly one non-strategic agent and forms a link with him in order to influence his opinion, and consequently, the final vector of opinions, if convergence occurs. We prove that indeed convergence occurs, and that the limit vector of opinions is still a consensus. This framework models a situation of lobbying: the non-strategic agents are the panel of experts/decision makers who must make a decision after discussion, represented as a number in [0, 1]. The strategic agents try to influence the final result at their advantage, by targeting one of the experts/decision makers. We consider a zero-sum game whose players are the strategic agents with a set of strategies which are the n non-strategic agents. Moreover, the payoff of the strategic agents is simply the difference between the final consensus value and their own opinion. We derive a general expression of the payoff of the strategic agent in this zero-sum game and show that a strategic agent has interest to target an agent that is both easily influenced (i.e., receiving few links) and central in the network. In particular, we derive the expression of the payoff for a uniform network (each agent has the same number of links) and the circle. We prove that in a symmetric network there always exists an equilibrium in pure strategies and that every agent in the network is an equilibrium in pure strategies.