

# 応用統計計量ワークショップ

主 催：日本オペレーションズ・リサーチ学会東北支部

共 催：サービス・サイエンスにおける数理最適化研究プロジェクト  
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産業のサービス科学」研究部門

日 時：2011 年 3 月 15 日（火）17：00－18：30

場 所：東北大学文科系総合研究棟 10 階第 21 演習室

講演者： Milan Vlach 教授（Charles University）

タイトル： Principles of Collective Decisions

## 概要

This talk offers a brief introduction to some of the fundamental issues and results of theory of collective decision-making in the situations wherein a group of individuals with diverse preferences is collectively trying to choose fairly among a finite number of mutually exclusive alternatives.

An obvious way in which a group of individuals can aggregate preferences of its members into group preferences is to use a voting procedure. However, it has been known for a long time that results of voting procedures may be in contradiction with some basic requirements of rationality when the group has two or more members and there are at least three alternatives.

We begin with simple examples to introduce some of the desirable properties of aggregation procedures and to explain difficulties in satisfying all of these properties simultaneously by a single procedure. Then we define three general concepts of aggregation: a collective choice rule, a social welfare function, and a social decision function; and three basic requirements: unrestricted domain, weak Pareto efficiency, and individual liberty. We conclude with discussing results on the possibility and impossibility of satisfying the requirements by aggregation procedures. In particular, we present three basic results in this line of research: Arrow's impossibility theorem, the Gibbard-Satterthwaite manipulability theorem, and Sens liberal paradox.

Key words: Social choice, Social welfare function, Social decision function,  
Manipulability, Liberal paradox.

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