# Master 2 internship
### experiments on deliberation based on formal artificial intelligence tools

# Keywords

# Internship presentation

Decision situations may involve multiple decision-makers and multiple stakes resulting from their various interests and knowledge, as for example in public policy decisions. In such situations, deliberative approaches, based on discussions and arguments, are very popular in the literature (Barber & Bartlett 2015) and in practice. Such approaches are even in some cases mandated by law (Code de l'Environnement, article R414-8). These approaches are in particular appreciated because of their (more or less clearly established) tendency to generate consensus. Many authors assume that deliberation favors the use of the "non constraining strength of the best argument", which would let opinions converge towards the opinion defended by the best argument (Habermas 1999). An alternative, equally plausible interpretation is that such convergences might be due to the fact that some powerful individuals or groups impose their views. The current literature offers only philosophical arguments to support the idea that an exposure to the whole set of arguments brings consensus among individuals or groups championing different arguments.

This internship aims at developing protocols to test this idea experimentally. The experiments will use a formalisation, developed by Cailloux & Meinard, of the argumentative positioning and of deliberated judgments. This formalisation aims at bringing the philosophical literature on deliberation closer to artificial intelligence (in particular to decision theory (Keeney & Raiffa 1993), multicriteria decision analysis (Greco et al. 2016) and formal argumentation theory (Dung 1995)). Depending on his or her interest and abilities, the intern will further develop the theoretical frame or the concrete application of the empirical study.

# Expected assets

The internship will either focus on deliberative procedures, or on decision theory and formal argumentation theory. The intern is expected to know some of these fields well, and be interested in the other ones.

# Environment

The proposal is about a Master 2 internship of about six months, with a gratification of 546 € per month.

It will take place at the LAMSADE. The LAMSADE, established in 1974, is a joint laboratory of Université Paris Dauphine and the CNRS. The original research subjects were Operational Research and Decision Aiding to which have been added in the subsequent years further subjects such as Decision oriented Computer Science, Decision Theory and Artificial Intelligence. Today the LAMSADE conducts research around the design, use and validation of Decision Aiding formal models. Our research starts at the very beginning of a decision process (what is a decision problem?), continues with the problems of extracting, learning and modeling of data, values,

preferences, with the design of systems (which could be endowed with a certain autonomy or intelligence), takes care of the hard algorithmic challenges such problems present and ends with validating and inserting decision recommendations within real organisational contexts. The LAMSADE is known for having created an original approach in Multiple Criteria Decision Analysis, for a unique approach in algorithmics and optimisation and for being at the origin of the Algorithmic Decision Theory field, areas where we are proud to be among the international leaders. The research conducted within LAMSADE applies to many and various areas going from transportation problems to scheduling, from assessing calls for tenders or the comfort in train carriages to the assessment of social acceptability of new technologies, from telecommunication networks to geographical information systems.

# References

- Barber, W.F., Bartlett, R.V. 2015. Consensus and Global Environmental Governance. MIT Press.

- Code de l'Environnement, article R414-8

- Dung, P. M. (1995). On the acceptability of arguments and its fundamental role in nonmonotonic reasoning, logic programming and n-person games. Artificial Intelligence, 77(2), 321–357. https://doi.org/10.1016/0004-3702(94)00041-X

- Greco, S., Ehrgott, M., & Figueira, J. R. (Eds.). (2016). Multiple Criteria Decision Analysis - State of the Art Surveys (2nd ed.). Springer. http://doi.org/10.1007/978-1-4939-3094-4

- Habermas, J. 1999. Die Einbeziehung des Anderen. Suhrkamp.

- Keeney, R. L., & Raiffa, H. (1993). Decisions with Multiple Objectives: Preferences and Value Tradeoffs (2nd ed.). Cambridge University Press.

# Contacts

Yves Meinard (yves.meinard@dauphine.fr), CNRS, LAMSADE ; Olivier Cailloux, MCF, LAMSADE