

Interdisciplinarity in LAMSADE

1 Introduction

Since its establishment the LAMSADE conducted research in several interdisciplinary topics. By definition the notion itself of decision aiding is interdisciplinary and the research tradition in the laboratory has always been faithful to this vision.

The commitment of the laboratory and the recognition of its interdisciplinarity are visible through a number of facts:

- 6 out of the 15 CNRS researchers are not in Computer Science, two of them being recruited by an Interdisciplinary Committee of the CoNRS (CID);
- 9 among the PhD thesis conducted under the supervision of LAMSADE members have a clear interdisciplinary content;
- the last 3 years the LAMSADE was awarded 6 research grants by the MITI (mission pour l'interdisciplinarité) of CNRS, two of which are PhD grants (Berkay Tosunlu and Sarra Tajouri);
- several research contracts with external partners (CIFRE, IRSN, INERIS etc.) are explicitly interdisciplinary;
- many among the publications of our members are on interdisciplinary journals or journals of other disciplines such: Socio-Economic Planning Sciences, Environmental Management, Journal of Comparative Policy Analysis, British Journal of Criminology, BMC Bioinformatics, Ecology and Society, Biological Conservation, Conservation Biology and many others.

During the period considered by this report the research topics which had a clear interdisciplinary character have been: “Policy Analytics”, “Risk and Resilience”, “Conflict Transformation and Management” and “Social Responsibility of Algorithms and Trustworthy Artificial Intelligence”. To these topics we should add two research areas which involve many among the researchers within the LAMSADE and which are by definition multi-disciplinary: social choice theory and game theory. For each of these topics and for the two areas we provide a brief presentation.

2 Policy Analytics

The topic concerns the development of a comprehensive methodology for supporting the design, the implementation and the assessment of public policies, taking

into account the massive availability of data. More details can be seen in the presentation of this research project in the main report. The topic has been the subject of an interdisciplinary GDR (www.gdr7320.fr) and of several international cooperation agreements with UCL (UK), ANU (AU), DIMACS (USA). It has been funded through several sources such as:

- the CIFRE contract with META-CONSEIL on assessing public research funding (Romain Touret PhD);
- the research contract with IRSN on informing the public authority about actions to undertake in case of major nuclear accidents at open seas (Ousama Raboun PhD);
- the ANR contract (LAMSADE, INERIS, INSA Rouen) on assessing the collective impact of major industrial accidents;
- the research contract with the French Minister of Environment on supporting decision making within crisis management.

A series of international workshops (started with the workshops conducted with the ANU in 2018 and 2019; for more details see <https://www.gdr3720.fr>) has been discontinued due to the COVID pandemic, but is resuming with the workshop to take place at DIMACS, 15-16 May 2023 about the UN Sustainability Goals.

3 Social Responsibility of Algorithms

The topic has been initiated in 2017. There have been two workshops in 2017 (Dauphine), 2019 (Dauphine) and 2022 (this originally scheduled for 2021 at ANU and then moved on-line). More details at

<https://www.lamsade.dauphine.fr/sra> and

<https://algorithmicfutures.org/sra22/>. The interdisciplinary perspective consists in integrating the social science point of view (legal studies, information studies, sociology and policy analysis) when considering the impact of the massive diffusion of autonomous artefacts with enhanced decision capacity and the establishment of requirements for their design.

The topic is locally conducted in cooperation with the UMR IRISSO (Social Sciences) with which we share a number of research grants:

- the 1 year Inter-fair project (2021) establishing a joint research seminar on algorithmic fairness and explicability (funded by the MITI/CNRS);
- = the 2 years 80-PRIME (2022-2023) which continues the Inter-fair research activities (funded by the MITI/CNRS);

- a 3 years Phd-grant (Sarra Tajouri) co-directed with Thierry Kirat (IRISSO) (funded by the CNRS);
- The DIMACS Special Focus on Mechanisms and Algorithms to augment Human Decision Making (see <http://dimacs.rutgers.edu/programs/sf/mechanisms>). The program has been discontinued due to the COVID-19 Pandemic, but resumed now.

Note-to-remove 3.1 *Should we add something about the work done by the MILES team?*

4 Conflict Transformation and Management

This topic has been the basis for establishing the unique (for the French speaking Universities) graduate program in Conflict Transformation and Peace Studies which is successfully run at Dauphine since 2014. We are not going to present the training activities, but focus on some research activities conducted within this topic in cooperation with the UMR IRISSO and the UMR DRM.

The first one concerns the study of decision support within crisis management (in cooperation with Anouck Adrot, DRM) supported by a recent research contract with the French Minister of the Environment, with a special focus on the construction of legitimating information for the decision makers when time is scarce.

The second one concerns the development of the subject “Policy Design for Conflict Transformation and Management”, supported by a CNRS Phd grant (Berkay Tosunlu) in cooperation with UCL (UK) and ANU (AU).

The third concerns the development of indexes for general purpose uses supporting policy design and assessment as well as the prevention of potential crisis and critical situations. A typical example consists in developing a world wide index about the “life in prisons”, developed by the LAMSADE in cooperation with the ONG Prison Inside.

5 Risk and Resilience

The climate and other global changes that our societies and territories are undergoing, prompt us to take up a number of challenges that are interdisciplinary by nature. Among such challenges: how to guide disaster risk prevention for organizations and territories? How to develop decision-making and scientific expertise

tools for a diversity of actors, taking into account a diversity of criteria and a diversity of management situations? How to qualify and quantify the relevance of public prevention policies? How to contribute to the societal responsibility of organizations and territories as well as to their proactive or reactive resilience in major disaster situations?

On these topics the LAMSADE research combines action research and intervention research projects, in collaboration with public decision-makers, economic sector actors and territories. Our research has been funded through several different sources including:

- the European project “Knowledge based disaster risk management” (DG ECHO);
- the two PEPR (Hydrogène décarboné and “IRIMA”)
- contract EDF REDT;
- consultancy for agencies such ADEME, IRSN, ANSES, IRGC (International Risk Governance Council).

On such topics we have been involved in an increasing number of interdisciplinary seminars and workshops, addressing essentially the practitioners networks such as AFITE, IMdR, AFPCN. It is worth to mention that our member Myriam Merad was part of the French delegation at the world COP-25 meeting.

6 Social Choice Theory and Game Theory

These two research areas (which are largely contiguous) involve a large portion of LAMSADE researchers and is (partially) the reason for which many CNRS researchers “not computer scientists” joined the LAMSADE.

A first reason has been the fundamental contribution of the LAMSADE in establishing and running the international communities of Algorithmic Decision Theory, Algorithmic Game Theory and Computational Social Choice.

The second reason has been the fact that portions of these areas are subjects to other Dauphine laboratories, namely the CEREMADE (Mathematics) and the LEDA (Economics), with which we maintain joint research activities and seminars.

The result has been a strong contribution in developing a multi-disciplinary perspective of these two areas for the whole University and beyond (see PSL).