



# 2019 Vilfredo Pareto Lecture

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## Executive Summary

One of the most influential scholars in economic theory in the last 30 years, with important/fundamental contributions to:

- Decision theory
- Game theory
- Social choice theory
- Probability theory
- Epistemology



## The Raw Data

- ❖ BSc in Mathematics and Computer Science, Tel Aviv University 1982
- ❖ BA in Economics, Tel Aviv University 1982
- ❖ PhD in Economics, Tel Aviv University 1987
- ❖ 1987-1997 Assistant to Distinguished Professor of Decision Sciences, Kellogg GSM, Northwestern University
- ❖ 1997- Professor of Economics, Tel Aviv University
- ❖ 2008- Professor of Economics and Decision Sciences, HEC Paris
- ❖ 2010- AXA Chair for Decision Sciences, HEC Paris
- ❖ Fellow of the Econometric Society and the Cowles Foundation for Research in Economics; International Honorary Member, American Academy of Arts and Sciences
- ❖ Editor: *Econometrica*; Associate Editor: *Econometrica*, *Games and Economic Behavior*, *International Journal of Game Theory*, *Journal of Economic Theory*
- ❖ Bibliometric stuff:
  - 86 journal articles, 6 books (!!!)
  - G-Scholar: 13500+ cites, h-index: 49
  - Scopus: 4473 cites (1717 just for MEU paper!), h-index: 27



## Research

An inquiring mind, with interests spanning from the foundations of rationality, probability and induction, to game theory and in social choice. Some examples:

### Game Theory

- The complexity of computing best-response automata in repeated games, JET 1988
- Nash and correlated equilibria: Some complexity considerations (with E. Zemel), 1989
- On the order of eliminating dominated strategies (with E. Kalai and E. Zemel), OR Letters 1990
- Social stability and equilibrium (with A. Matsui), Econometrica 1991
- Global games (with E. Lehrer), IJGT 1991

### Social Choice

- Linear measures, the Gini index and the income-equality tradeoff (with E. Ben-Porath), JET 1994
- Majority vote following a debate (with N. Vielle), SCW 2004
- Utilitarian aggregation of beliefs and tastes (with D. Samet and D. Schmeidler), JPE 2004



## Research

### Epistemology

- Rationality of belief (with A. Postlewaite and D. Schmeidler), *Synthese* 2012
- The predictive role of counterfactuals (with A. Di Tillio and L. Samuelson), *Theory and Decision* 2013
- Economic models as analogies (with A. Postlewaite, L. Samuelson and D. Schmeidler), *EJ* 2014

### Foundations of probability and induction

- A cognitive foundation of probability (with D. Schmeidler), *MathOR* 2002
- Inductive inference: An axiomatic approach (with D. Schmeidler), *Econometrica* 2003
- Probabilities as similarity-based frequencies (with A. Billot, D. Samet and D. Schmeidler), *Econometrica* 2005
- Subjectivity in inductive inference (with L. Samuelson), *TE* 2012
- Today's paper



## Research

### Decision Theory

- Expected utility with purely subjective non-additive probabilities, J. Math. Econ 1987
- Maxmin expected utility with a non-unique prior (with D. Schmeidler), J. Math Econ. 1989
- Updating ambiguous beliefs (with D. Schmeidler), JET 1993
- Case-based decision theory (with D. Schmeidler), QJE 1995
- Objective and subjective rationality in a multiple prior model (with F. Maccheroni, M. Marinacci and D. Schmeidler), Econometrica 2010
- *Theory of Decisions under Uncertainty* (with D. Schmeidler), Cambridge UP 2009



## Maxmin Expected Utility

One of the cornerstone models of modern decision theory. The decision maker may have *a set* of beliefs  $C$  rather than just one, and may act “conservatively” with respect to such multiplicity. That is, she evaluates each option  $f$  she faces by computing the expected utility of option  $f$  with respect to each subjective prior  $P$  in  $C$ , and then using the smallest such expectation:

$$\min_{P \in C} \int u(f) dP$$

Gilboa and Schmeidler (1989) were the first to show how this preference representation may be tied to observable behavior, in particular to ambiguity aversion (cf. Ellsberg (1961)).



## Case-based decision theory

Another fundamental contribution to the understanding of “boundedly” rational behavior. The decision maker evaluates option  $f$  in problem  $p$  by comparing it to other times (problem  $q$ ) in her memory  $M$  in which she has taken  $f$  in the past, which resulted in outcome  $r$ , and taking into account of the similarity of the problem at hand  $p$  and the past problem  $q$ :

$$\sum_{(q,f,r) \in M} s(p,q)u(r)$$

where  $u(\cdot)$  is a standard utility function and  $s(\cdot,\cdot)$  is a *similarity* function. Again, Gilboa and Schmeidler (1995) were the first show how this preference representation may be tied to observable behavior.