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Meta-Induction as Opinion Pooling Dynamics

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Abstract

Whereas theories of meta-induction are usually on beliefs in descriptions of single events, theories on opinion aggregation are usually on beliefs in whole theories. And whereas theories on opinion aggregation are usually on static opinions, theories of meta-induction are usually on dynamic opinions, i.e. opinions about changing events. Within this project it is tried to combine these approaches to a, by meta-induction, dynamified theory of opinion pooling. By the help of this combination it is hoped to overcome two specific problems in studies of metainduction and opinion pooling: first, a technical problem which arises in an expansion of meta-induction to strategies not only about single events, but on whole theories, namely a problem similar to the socalled *discursive dilemma*. Second, the problem of justifying different opinion pooling strategies (e.g. the majority rule, unanimity rule etc.) for different purposes. Beside the formal problems there are also many classical philosophical problems to be discussed as, e.g., the problem of induction, coherent judgment aggregation, testimony, and many more problems of social epistemology.

Meta-Induction & Opinion Pooling

The problem of induction: How to justify inductive methods:

A partial solution: meta-induction; main results: due to its optimality metainduction is the best of all available alternatives.

Impossibility results in judgment aggregation theory:

	gcd	$gcd \Rightarrow gt$	gt	
$Expert_1$		\boxtimes		\checkmark
$Expert_2$	\square			\checkmark
$Expert_3$	\boxtimes	\boxtimes	\boxtimes	\checkmark
$Panel_{1,2,3}$	\boxtimes	\boxtimes		
gcd: global carbon dioxide, gt: global temperature				

A partial solution: Purpose dependent judgment aggregation. E.g.:

- Purpose less false positives: unanimity aggregation
- Purpose less false negatives: anti-unanimity aggregation
- Purpose *wise crowd effect*: majority aggregation etc.

The Dynamics

Meta-Induction

Opinion Pooling

Definitions

- Meta-Induction ... is applied in a prediction game where at least one agent of the setting performs a meta-inductive strategy, i.e. a strategy that:
 - (meta:) grasps information about the strategies of all other agents and that
 - (induction:) figures out an optimal strategy with the help of the information about the agents' past performances.
- Opinion Pooling: ... is the process of forming intentional group attitudes (e.g. beliefs) out of individual ones.

$$\begin{array}{c} \downarrow & \downarrow \\ mi_{n+1}(p_{(1,n)}(A), \dots, p_{(i,n)}(A)) & aggr(p_1, \dots, p_i) \\ \searrow & \\ mi_{n+1}(p_{(1,n)}, \dots, p_{(i,n)}) \\ \downarrow \\ \end{array} \\ \begin{array}{c} \downarrow \\ Meta-Induction \ as \ Opinion \ Pooling \ Dynamics \end{array}$$

Main Project Aims

Theoretical aims:

- Expansion of the meta-inductivistic framework to social epistemology
- Demonstrate generalized meta-inductivistic optimality results
- Relate the optimality results to purpose dependent opinion pooling Practical aims:
- Classical: Figure out the relevance for the problem of induction
- Social epistemology: Embed problems and discussions of social epistemology (wise crowd effects, testimony, peer disagreement etc.) into the expanded framework of meta-induction as opinion pooling dynamics

References

- [1] Christian List and Philip Pettit. *Group Agency. The Possibility, Design, and Status of Corporate Agents*. Oxford: Oxford University Press,2011.
- [2] G. Schurz. "The Meta-Inductivist's Winning Strategy in the Prediction Game: A New Approach to Hume's Problem". In: *Philosophy of Science* 75.3 (2008), pp.278–305.

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