Isaac Levi Memorial Conference

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Conditional Probability, Conditionalization, and Total Evidence (based on ongoing work, joint with Robin Gong, Jay Kadane, Mark Schervish, and Rafael Stern)

Abstract. Isaac Levi often noted a three way distinction among the roles for conditional probability:

1. Conditional probability and called-off gambles.
2. Conditional probability and confirmational conditionalization under hypothetical expansions of a fixed corpus of knowledge.
3. Conditional probability and temporal credal conditionalization.

The first two of these roles for conditional probability involve the statics for credences: constraints on credences held at a given time, relative to a corpus of knowledge, including the statics for hypothetical (consistent) expansions of that corpus of knowledge. The third is a dynamic role, an updating rule, which requires that the static commitments are rigidly held over time as one acquires new (consistent) evidence.

There is a continuing literature whether standards for intertemporal coherence require that an agent who accepts roles 1 and 2 for conditional probability also is committed to 3. Dynamic "book" arguments of the kind promoted by P. Teller (following D. Lewis) advocate for 3. Levi repeatedly rejected those arguments.

In this presentation, instead, the focus is on the connection between roles 1 and 2 for conditional probability. Specifically, the focus is on differences between 1 and 2 that arise from the evident epistemic difference that called-off gambles involve no change in the agent's corpus of knowledge, whereas confirmational conditionalization does, at least hypothetically.

- If the agent hypothesizes an expanded corpus of knowledge that results from adding, observable evidence E to her/his existing corpus of knowledge, then under what circumstances does the agent's current conditional probability function $p(\cdot|E)$ satisfy the total evidence requirement, embedded in role 2, when hypothesizing E?
- What is the total (relevant) evidence needed for using conditional probability $p(\cdot|E)$ in role 2?

I illustrate the importance of this question in two contexts:

- The epistemic asymmetry between roles 1 and 2 helps to distinguish expansions using data from a well designed experiment versus data from an observational study.
- The epistemic asymmetry helps to identify the subtleties of "forward induction" reasoning in extensive form, sequential games.

Eleonora Cresto

Beyond Indeterminate Utilities. The Case of Neurotic Cake-Cutting

Abstract. Isaac Levi famously argued that we should distinguish between the seemingly conflicting forces we experience in cases of weakness of the will, and genuine cases of value conflict. The latter require inquiry, rather than therapy. However, responsible inquiry may well fail to yield a resolution. In such cases there isn't a unique cardinal utility function (up to positive affine transformation) that can represent the preferences of an agent: as with probabilities, utilities can be genuinely indeterminate. Here I explore a different sense in which indeterminacy can arise. It is clear that sometimes agents undergo preference changes. Interestingly, sometimes such changes are prompted by the fact that the agent comes to believe that someone else can be credited with a particular preference structure. In certain contexts, shifts of this sort give rise to a peculiar regret after acting in agreement with older preferences. This type of neurosis, so to speak, cannot be explained (nor cured) with the aid of sets of utility functions; the solution cannot rely on therapy to bolster will power either. We find paradigmatic examples of this general phenomenon at the time of addressing fair division problems. Typically, a fair division algorithm (such as a cake-cutting algorithm) is justified by showing that it fulfills a number of desirable properties, such as Proportionality, Pareto Optimality, or No-Envy. I identify a further desirable property, which I dub "No Conditional Regret." I argue that virtually all common mechanisms designed to achieve fair division are prone to conditional regret. To remedy this, I propose new algorithms that allow agents to successively adjust their preference structures, until they are all happy with what they would obtain. Finally, I give necessary and sufficient conditions for the adjustment procedure to stop, in which case the No Conditional Regret property will be indeed satisfied.

Ignacio Ojea Quintana

Unawareness and Levi's Consensus as Common Ground

Abstract. Isaac Levi famously defended the notion of consensus as common ground at the outset of inquiry (1985). In the presence of disagreement, the rational resolution requires all agents to contract their doxastic commitments to the weakest position that is compatible with all of the parties, and then proceed with inquiry. Before, Stewart and Ojea Quintana (2018b; 2018a) explored the case when the disagreement is at the level of the probabilistic values, suggesting the use of imprecise probabilities. Here I will make some observations on how common ground can be attained when it is about the underlying algebras in which those probabilities are defined.

Rush Stewart

Unawareness, Equality, Fraternity

Abstract. Epistemic states of uncertainty play important roles in ethical and political theorizing. Theories that appeal to a "veil of ignorance," for example, analyze *fairness* or *impartiality* in terms of certain states of ignorance. It is important, then, to scrutinize proposed conceptions of ignorance and explore promising alternatives in such contexts. Here, I study Lerner's probabilistic egalitarian theorem in the setting of imprecise probabilities. Much of the criticism of the relevance of Lerner's result centers on the representation of ignorance involved. Imprecise probabilities provide a general framework for reasoning about various forms of uncertainty including, in particular, ignorance. To what extent can Lerner's conclusion be maintained in this setting?

Nils-Eric Sahlin

Levi's Decision Theory: Lessons Learned

Abstract.

Wilfried Sieg

Scientific Theories as Set-Theoretic Predicates?

Abstract. That was a question to which Isaac Levi came back again and again in our conversations—over many years. He did raise it in a more specific context, namely, why did Patrick Suppes view scientific theories as set theoretic predicates? Nevertheless, the broader issue of structuralism in philosophy of science was in the back of his mind. I try to give now a more satisfactory answer than I could in our conversations.

References

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