

Evan Piermont

CURRICULUM VITAE

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EDUCATION

2011 – PRESENT	Doctor of Philosophy , ECONOMICS <i>University of Pittsburgh, Department of Economics</i> Expected Completion: May 2017 Dissertation: “The Formation and Evolution of Preference” Committee: Luca Rigotti (co-advisor), Roee Teper (co-advisor), and, Teddy Seidenfeld, Stephanie Wang
2014 – 2015	Visiting Scholar , ECONOMICS <i>Northwestern University, Department of Economics</i>
2013	Master of Arts , ECONOMICS <i>University of Pittsburgh, Department of Economics</i>
2007 – 2011	Bachelor of Arts , ECONOMICS AND MATHEMATICS <i>Lake Forest College</i>

RESEARCH

I am a microeconomic theorist and experimental economist. My research is focused on understanding the relationship between information and preference—developing models that explore preference formation, discovery, and evolution and how these processes effect economic interactions. I am interested in both theoretical foundation for these questions as well as the descriptive answers that arise from experimental methods. Primary Fields: Micro-Theory and Experimental Economics.

JOB MARKET PAPER

“Distributional Uncertainty and Persuasion”

PUBLICATIONS / R&Rs

“Learning the Krepsian State: Exploration Through Consumption,” with Norio Takeoka and Roee Teper, *Games and Economic Behavior*, November 2016, Vol 100, p.69-94

“Context Dependent Beliefs,” revisions requested from *Journal of Mathematical Economics*

“Introspective Unawareness and Observable Choice,” revisions requested from *Games and Economic Behavior*

WORKING PAPERS

“Plans of Action,” with Roee Teper, *under review*

“Reference Dependence and Attitudes Towards Uncertainty,” with Juan Sebastián Lleras and Richard Svoboda, *under review*

WORKS IN PROGRESS

“Rationalization and Robustness in Dynamic Games with Incomplete Information,” with Peio Zuazo-Garin, *work in progress*

“Unawareness, Communication, and Incomplete Contracts: An Experiment”, with Felipe A. Araujo, *work in progress*

“Partial Awareness,” *work in progress*

“Learning the Unexpected,” with Roee Teper, *work in progress*

TEACHING EXPERIENCE

2014 – 2015	Game Theory <i>Instructor, University of Pittsburgh</i> Student Evaluation of “overall teaching effectiveness”: 4.25/5
2016	Introduction to Microeconomics <i>Teaching Assistant, University of Pittsburgh</i> Student Evaluation of “overall teaching effectiveness”: 4.4/5
2016	Mathematical Methods for Economics (Graduate Class) <i>Teaching Assistant, University of Pittsburgh</i>
2014	Advanced Microeconomics 2 (Graduate Class) <i>Teaching Assistant, University of Pittsburgh</i>
2012 – 2013	Advanced Microeconomics 1 (Graduate Class) <i>Teaching Assistant, University of Pittsburgh</i>

AWARDS & HONORS

2015 – 2016	Andrew Mellon Predoctoral Fellow <i>University of Pittsburgh</i>
2014 – 2015	Social Sciences Doctoral Dissertation Fellow <i>University of Pittsburgh</i>
2014	Best Second Year Paper <i>University of Pittsburgh, Department of Economics</i>
2011	First Place in Undergraduate Paper Competition <i>Midwest Economic Association</i>
2011	Phi-Beta-Kappa Membership <i>Lake Forest College Chapter</i>
2011	Graduated Cum Laude <i>Lake Forest College</i>

CONFERENCE PRESENTATIONS

- 2015 **Risk, Uncertainty and Decision (RUD)**
Learning the Krepsian State
- 2015 **Theoretical Aspects of Rationality and Knowledge (TARK)**
Rationalization and Robustness in Dynamic Games with Incomplete Information
- 2015 **Stony Brook International Conference on Game Theory**
Rationalization and Robustness in Dynamic Games with Incomplete Information
- 2015 **Stony Brook International Conference on Game Theory**
Learning the Krepsian State
- 2016 **Risk, Uncertainty and Decision (RUD)**
Introspective Unawareness and Observable Choice
- 2016 **Logic and the Foundations of Theory (LOFT)**
Introspective Unawareness and Observable Choice
- 2016 **Economic Science Association: North American Meeting**
Unawareness, Communication, and Incomplete Contracts: An Experiment
- 2016 **Time, Uncertainties & Strategies**
Distributional Uncertainty and Persuasion

REFERENCES

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ABSTRACTS

Distributional Uncertainty and Persuasion. This paper investigates a Sender who tries to repeatedly persuade a Receiver. The Sender designs a signal structure, where signals regard a state that is drawn according to a distribution which is unknown to the Receiver. When information is disclosed more than once, each signal, in addition to its persuasive effect à la Kamenica and Gentzkow (2011), also changes the Receiver's belief about the underlying distribution. The Sender's optimal signal must balance these two effects. I characterize when the Receiver will learn the true distribution, and when the Sender prefers to keep the Receiver uncertain. Under mild conditions, the Sender's private information is never fully revealed in equilibrium. This paper also considers a variant of the above model where the Sender must publicly commit before becoming informed. There is a tight connection between the equilibria with and without public commitment: when commitments can be made conditionally, the same set of optimization

constraints dictate the optimal strategy in both environments. Capitalizing on this connection, I show that public commitment mechanisms need to be unconditional in order to ensure that the true distribution over the state space will be revealed in equilibrium. Hence, my analysis indicates that the metrics by which policy changes are evaluated should be committed to *before* any preliminary investigation.

Learning the Krepsian State: Exploration Through Consumption. (Joint with Roee Teper and Norio Takeoka). We take the Krepsian approach to provide a behavioral foundation for a class of responsive subjective learning processes. In contrast to the standard subjective state space models, the resolution of uncertainty regarding the true state is an endogenous process that depends on the decision maker's actions. In addition, there need not be full resolution of uncertainty between periods. When the decision maker chooses what to consume, she also chooses the information structure to which she will be exposed. When she consumes outcomes, she learns her relative preference between them; after each consumption history, the decision maker's information structure is a refinement of the previous information structure. We provide the behavioral restrictions corresponding to an infinite horizon, recursive representation that exhibits such a learning process. Moreover, through the incorporation of dynamics we are able to identify the set of preferences the decision maker believes possible after each history of consumption. That is, we identify the unique subjective state space without appealing to an environment with risk.

Context Dependent Beliefs. This paper examines a model where the set of available outcomes from which a decision maker must choose alters his perception of uncertainty. Specifically, this paper proposes a set of axioms such that each menu induces a subjective belief over an objective state-space. The decision maker's preferences are dependent on the realization of the state. The resulting representation is analogous to state-dependent expected utility within each menu; the beliefs are menu-dependent and the utility index is not. Under the interpretation that a menu acts as an informative signal regarding the true state, the paper examines the behavioral restrictions that coincide with different signal structures: elemental (where each element of a menu is a conditionally independent signal) and partitional (where the induced beliefs form a partition of the state space).

Introspective Unawareness and Observable Choice. This paper considers a framework in which the decision maker's (DM) knowledge and awareness are explicitly modeled, as is her ability to reason about her own (un)awareness. The DM has a ranking over consumption alternatives that is informed by her epistemic state (i.e., what she knows and what she is aware of). The main result is a characterization, via observable choice, of *introspective unawareness* – a DM who is both unaware of some information and aware she is unaware. In static environments, or when the DM is blind to her own ignorance, the presence of unawareness does not produce any observable choice patterns. However, under dynamic introspective unawareness, the DM will be unwilling to commit to making future choices, even when given the flexibility to write a contingent plan that executes a choice conditional on the realization of uncertain events. This is a behavior that cannot be explained by uncertainty alone (i.e., without appealing to unawareness). I show, in a simple strategic environment, this behavior can lead to the Pareto optimality of incomplete contracts.

Plans of Action. (Joint with Roee Teper). We study the extent to which contemporaneous correlations across actions affect an agent's preferences over the different strategies in exploration problems. We show that such correlations carry no economic content and do not affect the agent's preferences and, in particular, her optimal strategy. We argue that for similar reasons there is an inherent partial identification of the beliefs in exploration problems. Nevertheless, even under the partial identification, we show there are meaningful behavioral restrictions allowing the modeler to test whether the agent is acting according to some Bayesian model.

Reference Dependence and Attitudes towards Uncertainty. (Joint with Juan Sebastián Lleras and Richard Svoboda). This paper characterizes a model of reference-dependence, where a state-contingent

contract (act) is evaluated by its expected value and its expected gain-loss utility. The expected utility of an act serves as the reference point, hence gains (resp., losses) occur when the act provides an outcome that is better (worse) than expected. The utility representation is characterized by a belief regarding the state space and a degree of reference-dependence; both are uniquely identified from behavior. We establish a link between this type of reference-dependence and attitudes towards uncertainty. We show that loss aversion and reference dependence are equivalent to max-min and concave expected utility.

Rationalization and Robustness in Dynamic Games with Incomplete Information. (Joint with Peio Zuazo-Garin). In this paper we show a formal connection between the epistemic characterization of a solution concept and its robustness to the misspecification of parameters. This provides both an important conceptual link and a direct method for checking robustness when the epistemic characterization is known. We use this result to show that Extensive Form Rationalizability (EFR) is upper-hemicontinuous. We also present a new framework that relaxes the common knowledge restrictions regarding the space of payoff parameters. Then, we propose a new type of robustness, *s-robustness*, to modeling errors of the player understanding of the space of uncertainty. This is of particular importance in dynamic environments. We characterize this notion through our epistemic framework. Finally, we provide a structure theorem for EFR with personal spaces of uncertainty that shows that no common knowledge assumptions regarding the existence of dominance states are required to achieve generic dominance solvability.

Unawareness, Communication, and Incomplete Contracts: An Experiment. (joint with Felipe A. Araujo). We develop an extension of the above model to strategic contracting environments and experiment test the predictions. There are two players: a *broker* is tasked with constructing a portfolio to (potentially) be sold to an *investor*. The set of events upon which these instruments may be contingent on is large, and may not be fully understood by either party. In our experiment, these events are all possible (English) words that can be formed using a set of six letters. For each word, the broker can construct a *contract*, whose payoff depends in part on the word. Payment is such that finding more words increases the expected value of the portfolio. The investor then values the portfolio of contracts after observing an informative signal about the set contracts. Our treatment is variation in the information asymmetry between the broker and investor and in the information disclosure policy of the broker. For the information variation, the investor is either shown the full set of possible words (fully aware) or is shown only the letters themselves (partially aware). For the disclosure variation, the signal shown to investors is either chosen randomly or by the broker. In addition to undervaluing the contracts as outlined by the above model, we predict that broker's will strategically withhold information that might increase the unawareness aversion of the investors. Thus, strategic incentives motivate agents to suppress information. We designed a browser based interface using the Python web-framework Django and SQL. We ran a pilot study in April of 2016, which indicated that subjects understood the interface and displayed some level of unawareness aversion, although the sample was too small for meaningful statistical analysis. We are currently applying for grants to fund a full trial.

A Logic for Partial Awareness. This paper investigates how agents might slowly grow aware of information. Awareness, within both the decision theoretic and logical literatures is considered as a discrete state; an agent is either aware or unaware of a piece of information. In an analog to probability, I consider a novel theory in which awareness of a proposition is represented by a number between 0 and 1. Moving from zero to nonzero awareness represents becoming aware of a proposition; increasing an already non-zero awareness represents growing awareness of the proposition. I show how awareness of a proposition is dictated by awareness of the entailments of the proposition, how becoming aware differs from growing awareness, and how the level of awareness interacts with the agent's probabilistic view of the world.