Research Statement – Roberto Weber
August 2006

I. Introduction

Described broadly, my research consists of behavioral and experimental studies of decision-making in economic and organizational contexts, frequently using economic games to study interaction. As a result, my work often lies at the intersection of economics, game theory, organizational behavior, business strategy, and political science.

One important goal driving my research is to develop novel laboratory paradigms that bring experiments closer to how we observe economic and organizational phenomena in the real world. Thus, I often attempt to find ways to introduce potentially important features of naturally-occurring economic, organizational, and social environments into laboratory experiments, in order to study how such features influence decisions and outcomes.[1]

This approach has produced several important research contributions. My work appears in leading journals in economics (Weber, 2006; *American Economic Review*), organizational behavior (Weber, Camerer, Rottenstreich & Knez, 2001; *Organization Science*), management (Weber & Camerer, 2003; *Management Science*), and game theory (Weber, 2003; *Games and Economic Behavior*). My work was also recently cited in a *Science* article, on new frontiers in social science research, as an example of the usefulness of laboratory experiments for understanding behavior in organizations (Butz & Torrey, 2006). Finally, some of my recent work on social preferences is receiving considerable attention because of the novel perspective it adds to our understanding of the motivations for fair and altruistic behavior.

In what follows, I describe some of my contributions and briefly discuss my on-going research. I divide my contributions into three broad areas: a) organizations and political institutions, b) behavioral game theory, and c) improved understanding of social preferences.

II. Organizations and political institutions

I am interested in the functioning of the organizations and institutions prevalent in modern society. Therefore, a significant part of my work deals with organizations, the phenomena that tend to occur within them, and the functioning of related social systems such as political institutions. Put broadly, my research in this area studies the aggregation of individual decisions, behavior, and beliefs into broader social and economic outcomes.

As with most of my research, my work in this area often involves experiments that bring complex organizational or political phenomena into controlled laboratory settings in order to study precisely how such phenomena occur or what drives them. However, I also often seek opportunities where naturally-occurring field data can be used to address the same kinds of questions.

---

[1] For instance, my laboratory work on organizations incorporates simplified versions of phenomena such as leadership (Weber, Camerer, Rottenstreich & Knez, 2001); culture (Weber & Camerer, 2003); and firm growth (Weber, 2006) to understand precisely how they influence outcomes in firms. Similarly, my work on altruism and social behavior introduces features such as strategic information acquisition (Dana, Weber & Kuang, forthcoming) and endogenous selection of environments (Lazear, Weber & Malmendier, 2006) to better understand the kinds of decisions and outcomes that are likely to occur outside the laboratory. See Weber and Camerer (2006) for a discussion of the value of introducing naturally-occurring features into laboratory research in economics.

1. Summary of previous work

Much of my research on organizations deals with the coordination of activity among independent actors. [2] Coordination is important within firms and my work often identifies features of a situation that make it easy or hard to achieve efficient coordination.[3] For instance, some of my research explores the influence of leadership in coordinating activity and how situational features can influence the effectiveness of leaders (Weber, Camerer, Rottenstreich & Knez, 2001; Kuang, Weber & Dana, forthcoming). Other research explores coordination problems in merging firms, how these problems relate to organizational culture, and the consequences of such problems (Weber & Camerer, 2003). Additionally, I have also explored how coordination problems are influenced by incentives such as rewards and punishments (Weber, Rick & Hamman, 2006), by the changes a firm undergoes as it grows (Weber, 2006), and by the kinds of knowledge held by firm members (Rick, Weber & Camerer, 2006).

I also study organizational topics other than coordination. For instance, one of my papers explores the phenomenon of escalation of commitment, or chasing sunk costs, among managers in the National Basketball Association (Camerer & Weber, 1999). Another explores the characteristics of trust within organizations (McEvily, Weber, Bicchieri & Ho, forthcoming).

Finally, I have also studied the functioning of political institutions and the behavior of individuals within those institutions. For instance, I have examined the formation of voter beliefs (Glasgow & Weber, 2005; Patty & Weber, forthcoming (a)) and the decision-making processes of political institutions (Patty & Weber, forthcoming (b)).

2. Illustrative example

One of my papers in this area explores the relationship between firm size – or the size of any social collective – and coordination problems (Weber, 2006). Many previous experiments document a strong negative effect of group size on the ability of group members to coordinate their activity (Van Huyck et al., 1990; Weber et al., 2001). This raises a puzzle concerning why we observe large, efficiently-coordinated firms in the real world when they are so difficult to obtain the laboratory. I show that the growth process a firm undergoes is critical to determining the extent to which that firm is able to maintain coordination. Firms start small, when solving coordination problems is easy. The way in which they grow can allow them to add new members, while maintaining the efficient coordination they were able to obtain when small. If firms grow too quickly or if they fail to provide new entrants with adequate information about firm practices, then they are likely to experience coordination problems.

This finding is important, as it represents a very rare instance in which several large laboratory groups are able to independently obtain efficient coordination, and it presents a possible mechanism whereby the puzzle of large-group coordination failure might be solved.[4]

3. On-going research

I have several current projects dealing with the study of organizations and political institutions. I present two examples.

Determinants of effective leadership. Building on my above work on leadership, I am working on a project (with David Cooper and Jordi Brandts) that explores the determinants of a leader's effectiveness in obtaining coordination. In particular, we explore how the process of

---

[2] My interest in experiments on coordination extends to my undergraduate research (Weber, 1994).
[3] In Weber (2002) I draw connections between the organizational and game-theoretic literatures on coordination.
[4] In a related working paper I present a simple dynamic model explaining why growth might work (Weber, 2005).

selecting a leader influences that leader's credibility among followers, and therefore the extent to which the leader is able to coordinate followers' activity.

Internal prediction markets. Much research demonstrates that asset markets are effective for aggregating information and predicting outcomes (Sunder, 1995). However, the outcomes produced by the internal processes of organizations are often hard to predict accurately, due to complexity and biases among those generating predictions. In two current projects, I explore the ability of markets to predict the outcomes of complex internal firm processes. In one study (with Shimon Kogan and Anthony Kwasnica), we explore whether asset markets can predict the outcomes of coordination games, while in another (with Don Moore and Shimon Kogan) we explore whether markets can mitigate well-known judgment biases in prediction and forecasting.

III. Behavioral game theory

I am also interested in game theory – which forms the basis for much of my work on organizations – and how we can use the laboratory to test its theoretical assumptions and implications. A significant portion of my work deals with these kinds of tests.

1. Summary of previous work

Most of my work in this area identifies important assumptions in game-theoretic models, and then conducts laboratory tests of these assumptions. For instance, one paper shows that behavior is influenced by payoff magnitudes, which traditional theory assumes do not affect behavior (McKelvey, Palfrey & Weber, 2000). Another paper explores the assumption of common knowledge of rationality, and shows that it is not satisfied even in a setting where players want everyone to be rational (Weber, 2001). Finally, a third paper explores the extent to which changing the timing of moves matters in games, even when it is not accompanied by changes in information (Weber, Camerer & Knez, 2004). In all three cases, the results of experiments prove informative about the descriptive shortcomings of traditional theory, and also shed light on how theory might be improved. For instance, in McKelvey, Palfrey and Weber (2000) we show that a model with noise and heterogeneity accounts for players' behavior.

I am perhaps proudest of my work on learning in games (Weber, 2003; Weber & Rick, 2006). This work, described in more detail below, shows that people engage in more than one kind of learning when playing games – and that current learning models account for only one kind. This is particularly important, as the second kind of learning (on which I focus) has long been recognized by cognitive and educational psychologists.

Finally, some of my work also addresses assumptions that relate to decision making beyond game theory. For instance, one of my recent papers (Loewenstein, Moore & Weber, 2006) explores how people use information, in instances where more information is harmful.

2. Illustrative example

One of my main contributions to the field of behavioral game theory is on the topic of learning. In two experimental papers (Weber, 2003; Weber & Rick, 2006), I demonstrate that there is a kind of learning that takes place that cannot be explained by any current game-theoretic learning models. Moreover, this kind of learning has long been recognized by psychologists as more profound and significant than the kind of learning on which game theorists have focused.

In the 2003 paper, I demonstrate that people learn – that is, they adjust their behavior in the direction of Nash equilibrium – when playing games repeatedly without *any feedback*. Since all current models of learning in games rely on a history of outcomes to produce learning, this evidence suggests a kind of learning not present in current models.

While writing the above paper, I was unaware of psychologists' dichotomy regarding the way in which people learn (Mandler, 2004). However, one such kind of learning ("feedback-based adjustment") corresponds to the way that current game-theoretic models account for changes in behavior with experience – by a simple, mechanical adjustment process in the direction of better-performing behaviors. However, psychologists usually recognize the second kind of learning ("reflective") as more important, since it corresponds to an improved understanding of concepts and relationships and can be transferred to new settings or problems.[5]

The second paper tests for this deeper kind of learning, and particularly for the extent to which it transfers to new games. Again using the paradigm in which subjects play games repeatedly without feedback to eliminate the possibility of feedback-based adjustment, the two experiments in the paper demonstrate that subjects engage in the other kind of (reflective) learning in several different games. This learning operates by subjects acquiring the principle of iterated dominance. Perhaps most importantly, this kind of learning transfers to new games. The experiments in this paper represent one of the very few instances in which subjects regularly demonstrate transfer of learning across games. Moreover, we demonstrate that when subjects play a first game with feedback – thus engaging in feedback-based adjustment – they fail to transfer what they've learned to a new game. This is important, as it demonstrates that the kind of learning that occurs without feedback, reflective learning, is more profound (it transfers more easily) than the feedback-based adjustment present in economic models.

The work in this second paper is particularly important, because it introduces to game theory a distinction between kinds of learning that has long been recognized by psychologists, and that has important implications for subsequent behavior. However, this distinction is novel to the study of learning in games.

3. On-going research

My current research continues to pursue important issues in the sub-field of behavioral game theory. I again present two examples: the first tests important game theoretic assumptions; the second introduces a new laboratory tool for measuring an important economic phenomenon, based on how we observe it in the real world.

Information aggregation in networks. One current project (with Ayça Ebru Giritligil and Jordi Brandts) explores biases in how individuals in a network aggregate private information. We build on previous theoretical work exploring the possibility that people may overweight information from others that are central in the network (DeMarzo, Vayanos & Zwiebel, 2003), and also extend this work to explore other informational biases.

The measurement of trust. Another project on behavioral game theory (with Bill McEvily and Joseph Radzevick) addresses the measurement of trust. While existing paradigms for measuring trust in the laboratory are widely used (Berg, Dickhaut & McCabe, 1995), they also pose problems in that they conflate the measurement of trust with other phenomena such as

[5] To give an example in the context of games: the first kind of learning corresponds to playing strategy a_1 in a particular game because it works well in that game, while the second kind of learning corresponds to understanding that such a strategy works better because it always performs better than other strategies (the principle of dominance).

risk attitudes and altruism. Our work begins with a simple point about how we often measure distrust in the real world: by people's willingness to incur costs (contracts, monitoring) to mitigate their vulnerability to others. We develop a game based on this notion and show that it correlates with attitudinal measures of trust but not with measures of risk preference or altruism.

IV. Improved understanding of social preferences

One area of economics in which I have great interest is social and altruistic behavior. In many economic, organizational, and policy domains, it is important to understand what makes people sacrifice self-interest for others' welfare. My recent work adds to this literature by introducing and demonstrating that much pro-social behavior results not from a preference for fair or equitable outcomes or behavior, but instead from individuals feeling compelled to comply with social norms in certain contexts. This is important, because it tells us that people often behave fairly not because they want to, but because they feel obligated to do so. This motivation also implies that people will seek out and rely on excuses to behave self-interestedly, and that one can shift the amount of pro-social behavior by changing the strength of applicable norms.

1. Summary of previous work

Much of my work in this area demonstrates that people who behave fairly in one context are often willing to seek out and rely on justifications for behaving self-interestedly in other almost identical contexts. My work also identifies precise mechanisms that present such justifications and therefore helps shed light on the conditions under which people will and will not behave fairly. For instance, my work shows that, in order to behave self-interestedly, people will often rely on uncertainty and ambiguity (Dana, Weber and Kuang, forthcoming; Haisley & Weber, 2006), the possibility to select into or out of environments (Lazear, Malmendier and Weber, 2006), and the ability to delegate agency to a third party (Hamman, Weber & Loewenstein, 2006) as justifications to avoid moral responsibility.

In a related line of research, a Ph.D. student and I explore the influence of social norms on behavior. Our work seeks to identify precisely how norms influence behavior, develop a model of these influences, and create a method for measuring norms that is applicable both in the laboratory and in naturally-occurring economic contexts. Our first paper on the topic (Krupka & Weber, 2006a), builds on work in psychology to show that norms only affect behavior if an individual's attention has been drawn to the norm. This "focusing" influence yields counter-intuitive predictions, which we demonstrate in an experiment. In more recent work (Krupka & Weber, 2006b), we develop a method for measuring norms based on the extent to which people share agreement on the appropriateness or inappropriateness of given behaviors. We then show that such norms explain a considerable amount of behavior in experiments involving altruism.

2. Illustrative example

Dana, Weber and Kuang (forthcoming) introduces the notion that people who appear to value fairness in one context will behave self-interestedly in other instances by relying on contextual justifications to do so. We term this phenomenon "moral wiggling," whereby people seek excuses to circumvent social obligations that they would prefer not to fulfill.

In the experiment, we first demonstrate an environment in which a large majority of people behave pro-socially, at a personal cost. This is similar to many experiments on the well-known "dictator game," in subjects regularly engage in costly other-regarding behavior. However, we then show that in almost identical contexts a majority of people behave self-interestedly. In each case, the new contexts are obtained by adding a feature to the baseline case that superficially obscures the relationship between actions and outcomes – so that a subject can justify to herself or to others that the bad social outcome was not really her fault. For example, in one modification we place subjects in a state where they are unaware of whether their self-interested behavior will help or harm others. Even though this uncertainty can be resolved at no cost, we find that almost half of subjects choose not to do so in order to behave self-interestedly.

This work is important, as it introduces a new way of thinking about the motivations for social behavior, in contrast with previous research that assumed that people behaved fairly because they valued doing so.

3. On-going research

This area of my research constitutes much of my most recent work, and therefore there are several on-going projects. I present two examples.

Self-serving perceptions of effort and equity. One project (with Scott Rick) develops a simple model in which perceptions of fairness are driven both by outcomes (payoffs) and by individuals' effort. We allow individuals biased perceptions of their own and others' effort, and show that such bias is consistent with most existing studies. We then conduct experiments to test predictions of the model regarding how individuals will bias their perceptions of effort.

Explicit vs. implicit deception. Rosemarie Nagel and I recently conducted a study in which explore how the degree to which people deceive others varies depending on contextual features. We specifically explore situations in which individuals have to deceive others either explicitly (by stating something that is not true) or implicitly (by allowing their actions to convey private information).

IV. Conclusion and other contributions to research

Finally, in addition to my original research projects and publications, I have contributed significantly to the synthesis and dissemination of knowledge in these different research areas. For instance, I helped organize two conferences: the 2003 Economic Science Association Meetings in Pittsburgh and a 2004 conference on learning held at Carnegie Mellon. I also have served editorial functions at several journals: I co-edited an issue of *Experimental Economics*, am currently on the editorial review board for *Organization Science*, and have become an associate editor for *Management Science*. Finally, I co-wrote a chapter on behavioral economics for the *Handbook of Economic Sociology* (Weber & Dawes, 2005) and am currently co-writing a chapter on experimental research on organizations for the upcoming *Handbook of Organizational Economics*.

My research spans several topics within behavioral economic and organizational research. My work often identifies key features of important naturally-occurring organizational and economic phenomena, and then incorporates these phenomena into laboratory experiments in order to gain insights. This approach has produced important results – from an improved understanding of coordination in organizations, to precise tests of game-theoretic assumptions, to a more accurate understanding of the motives underlying social behavior. Of course, my research is part of an on-going process, in which I plan to continue to seek new opportunities, domains, and methods for contributing to our understanding of important economic, organizational, and social phenomena.

V. References

Butz, W. P. and B. B. Torrey. (2006). "Some frontiers in social science." Science 312(5782): 1898 – 1900.

Camerer, C. (2003). *Behavioral Game Theory: Experiments on Strategic Interaction*. Princeton, NJ: Princeton University Press.

Camerer, Colin and Roberto Weber. (1999). "The econometrics and behavioral economics of escalation of commitment in NBA draft choices." *Journal of Economic Behavior & Organization* 39(1): 59-82.

Camerer, Colin and Roberto Weber. (forthcoming). "Growing organizational culture in the laboratory." In *Handbook of Experimental Economics Results*, eds. Charles R. Plott and Vernon L. Smith. Amsterdam, The Netherlands: Elsevier.

Crawford, Vincent. "Adaptive dynamics in coordination games." *Econometrica*, 1995, 63(1), 103-143.

Dana, Jason, Roberto Weber and Jason Xi Kuang. (forthcoming). "Exploiting 'moral wriggle room': Experiments demonstrating an illusory preference for fairness." *Economic Theory*.

DeMarzo, Peter M. and Vayanos, Dimitri and Zwiebel, Jeffrey (2003) Persuasion bias, social influence, and uni-dimensional opinions. *Quarterly journal of economics*, 118 (3). pp. 909-968. ISSN 1531-4650

Glasgow, Garrett and Roberto Weber. (2005). "Is there a relationship between election outcomes and perceptions of personal economic well-being? A test using post-election economic expectations." *Electoral Studies* 24(4): 581-601.

Haisley, Emily and Roberto Weber. (2006). "Favorable interpretations of ambiguity and unstable preferences for fairness." Working paper.

Hamman, John, Roberto Weber and George Loewenstein. (2006). "Self-interest through agency: An alternative explanation for the principal-agent relationship." Working paper.

Hoffman, Elizabeth, Kevin McCabe, Keith Shachat, and Vernon Smith. (1994). "Preferences, property rights and anonymity in bargaining games," Games and Economic Behavior, 7: 346-380.

Krupka, Erin and Roberto Weber. (2006a). "The observational and focusing influences of social norms in dictator allocation decisions." Working paper.

Krupka, Erin and Roberto Weber. (2006b). "Why does dictator game sharing vary? Measuring social norms in the laboratory." Working paper.

Kuang, Jason Xi, Roberto Weber and Jason Dana. (forthcoming). "How effective is advice from interested parties? An experimental test using a pure coordination game" *Journal of Economic Behavior and Organization*.

Lazear, Edward, Ulrike Malmendier and Roberto A. Weber. (2006). "Sorting in experiments with application to social preferences." Working paper.

Loewenstein, George, Don A. Moore and Roberto Weber. (2006). "Misperceiving the value of information in predicting the performance of others." *Experimental Economics* 9(3): 281-295.

Loewenstein, George, Drazen Prelec and Roberto Weber. (1999). "What me worry? A psychological perspective on economic aspects of retirement" in *Behavioral Dimensions of Retirement Economics*, ed. Henry J. Aaron. Washington, D.C.: Brookings Institution Press.

Mandler, J. M. (2004). *Foundations of Mind: Origins of Conceptual Thought*. New York: Oxford University Press.

McEvily, Bill, Roberto Weber, Cristina Bicchieri and Violet Ho. (forthcoming). "Can groups be trusted? An experimental study of collective trust." In R. Bachmann and A. Zaheer (Eds.) *The Handbook of Trust Research*, Edward Elgar Publishing.

McKelvey, Richard, Thomas Palfrey and Roberto Weber. (2000). "The effects of payoff magnitude and heterogeneity on behavior in 2x2 games with unique mixed strategy equilibria." *Journal of Economic Behavior & Organization* 42(4): 523-548.

Nagel, Rosemarie. (1995). "Unraveling in guessing games: An experimental study." American Economic Review, 85: 1313-1326.

Patty, John W. and Roberto Weber. (forthcoming). "Letting the good times roll: A theory of voter inference and experimental evidence." *Public Choice*.

Patty, John W. and Roberto Weber. (forthcoming). "Agreeing to fight: An explanation of the 'Democratic Peace.'" *Politics, Philosophy & Economics*.

Rick, Scott, Roberto Weber and Colin Camerer. (2006). "The effects of organizational structure and codes on the performance of laboratory 'firms.'" Working paper.

Stahl, D. O. and P. Wilson. (1995). "On players' models of other players: Theory and experimental evidence." Games and Economic Behavior, 10: 218-254.

Staw, B. M. and H. Hoang. (1995). "Sunk costs in the NBA: Why draft order affects playing time and survival in professional basketball." Administrative Science Quarterly 40(3): 474-494.

Sunder, S. (1995). "Experimental asset markets: A survey." In Handbook of Experimental Economics, Princeton, NJ: Princeton University Press.

Van Huyck, John. B., Raymond C. Battalio and Richard O. Beil. (1990). "Tacit coordination games, strategic uncertainty and coordination failure." *The American Economic Review* 80(1): 234-248.

Weber, Roberto. (1994). "The Role of Alternative Market Institutions on Equilibrium Selection in Coordination Games." Texas A&M undergraduate honors thesis.

Weber, Roberto. (2001). "Behavior and learning in the 'dirty faces' game." *Experimental Economics* 4(3): 229-242.

Weber, Roberto. (2002). "Organizational coordination: A game-theoretic view." Working paper.

Weber, Roberto (2003). "`Learning' with no feedback in a competitive guessing game." *Games and Economic Behavior* 44(1): 134-144.

Weber, Roberto (2006). "Managing growth to achieve efficient coordination in large groups: Theory and experimental evidence." Working paper.

Weber, Roberto (2006). "Managing growth to achieve efficient coordination in large groups." *The American Economic Review* 96(1): 114-126.

Weber, Roberto. (2006). "Reflective learning and transfer of learning without feedback: An experimental test across games." Working paper.

Weber, Roberto and Colin Camerer. (2003). "Cultural conflict and merger failure: An experimental approach." *Management Science* 49(4): 400-415.

Weber, Roberto and Colin Camerer. (2006). "'Behavioral' experiments in economics" (Introduction to the special issue on behavioral economics). *Experimental Economics* 9(3): 281-295.

Weber, Roberto, Colin Camerer and Marc Knez. (2004). "Timing and virtual observability in ultimatum bargaining and 'weak-link' coordination games." *Experimental Economics*. 7(1): 25-48.

Weber, Roberto and Robyn Dawes. (2005). "Behavioral economics." In *Handbook of Economic Sociology*, eds. Neil Smelser and Richard Swedberg. Princeton, NJ: Princeton University Press.

Weber, Roberto, Scott Rick and John Hamman. (2006). "Solving coordination failure with 'all-or-none' group-level incentives." Working paper.

Weber, Roberto, Yuval Rottenstreich, Colin Camerer and Marc Knez. (2001). "The illusion of leadership: Misattribution of cause in coordination games." *Organization Science* 12(5): 582-598.