Book Review: *Theory of Moves*

by Steven J. Brams
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It is hardly surprising that variations on game theory are being developed at the same time that game theory's successes are being celebrated with the 1994 Nobel Prize in Economics. In *Theory of Moves*, Steven Brams provides ample evidence that these variations may be very successful in some new arenas. Beginning with some generally-accepted models and methods from game theory, Brams stirs in some appealingly simple decision principles, adds a few assumptions, and applies the blend to a very cleverly chosen array of examples. Further variations on Brams's recipes are certainly possible and may indeed be improvements, but, as this book clearly demonstrates, the meal is tasty and good for you too; future refinements are to be welcomed.

The Theory of Moves comprises several methods for analyzing formal models that differ in several crucial ways from games, although they have much in common. Conflicts are seen as moving from state to state according to unilateral actions by the players—the initial state matters, and so can the relative powers of the players to continue, or stop, the process. The methodology is resolutely ordinal, which makes conflict models easier to specify *and* avoids utilities, mixed strategies, and other aspects of game theory that can be difficult to apply and to communicate. Many real-world problems, including many negotiations, represent natural domains of application for a theory like the Theory of Moves.

Steven Brams is not the only developer of game-theory-related methodologies. For example, "non-myopic" calculations like those of Brams are included in the Graph Model for Conflict Resolution (Fang et al. 1993) and Decision Systems Analysis (Langlois 1994). These latter systems have actually been implemented in software, as has Conflict Analysis (Fraser and Hipel 1991). Other methodologies for understanding strategic conflicts and advising decision makers facing them include Drama Theory (Howard 1994) and many of the proposals in Daellenbach's (1994) survey. Explicit applications to negotiation appear in Kilgour et al. (1994) and Meister and Fraser (1994). What all of these endeavors have in common is game-theoretic roots—all are essentially game theory variants that have been designed to yield better decision advice or more compelling structural insights.

The Theory of Moves is a leading member of this group, and is especially appealing because of its simplicity and ability to explain examples. While one can quibble about some of Brams's choices (Why call a NME an "equilibrium" when it may not be stable, as illustrated by one of the first examples [p. 55]? Would it never benefit players to have the possibility, or the threat, of cycling [p. 27]?), it is easy to appreciate the final product. Particu-

larly appealing are the interplay among the various notions of power, and the demonstrations that power may harm the player who has it, or benefit the one who does not. These power definitions might prove key to understanding and capitalizing on many perplexing aspects of interactive decisions, provided that the definitions can be extended to larger models than the 2×2 game structures that Brams uses almost exclusively.

The major direct application to negotiation is, however, a more elaborate three-player multi-step structure specifically designed to explore the consequences of positive values for impasse. It is applied, quite appropriately, to the 1993 GATT negotiations. While close to the spirit of the Theory of Moves, this suggestive model does lie beyond the reach of the main definitions earlier in the book. Yet it is grossly unfair to suggest that Brams relegates negotiation to one chapter, for many examples throughout *Theory of Moves*, like Camp David and the Cuban Missile Crisis, are really about bargaining tactics and outcomes.

In fact, it is the examples that give *Theory of Moves* its greatest appeal. The clever selection, the lively description, the careful modeling, and the cogent analysis together constitute a *tour de force*. Consider this more-or-less random selection: Samson and Delilah, the climactic scene of William Faulkner's *Light in August*, self-restraint by mugging victims, believing in God, bombing campaigns in Vietnam, the Polish Communist Party vs. the Solidarity trade union, the Iran Hostage Crisis, and Hamlet versus Polonius. Models of all of these decision problems, and many others, are used beautifully to illuminate specific points of the Theory of Moves.

Game-theory-related methods have a great deal to tell us about how strategic conflict works, and promise substantial insights into how to make better strategic decisions. Systems like the Theory of Moves will undoubtedly be the vehicles that deliver strategic support to the policy makers and the negotiators of the future. The amazing collection of examples that Steven Brams uses to illustrate *Theory of Moves* is not only a delight on its own, it is also a compelling demonstration of how many new and significant problems game-theory-based methods can insightfully address.

References

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