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LET'S BLOCK "BLOCK"

BY LLOYD S. SHAPLEY

THE TERM "block" is counterintuitive and misleading in connection with the core, and should be avoided or clarified whenever possible, despite its history of past usage in the economics/game theory literature [1, 4, 7, etc.]. "Block" is proving to be an obstacle to the reception of the ideas and results of game theory into related fields.

Economists new to game theory, for example, very often imagine that the core concerns the ability of coalitions to *obstruct* the system, as in a strike or lockout, or a cartel withholding goods from market, etc., but this is quite incorrect. "Why can't the duopolists make their blocking power felt in the core?" is a frequent, puzzled question from the floor (and sometimes the podium). Actually, the puzzle is not a paradox, but a pun—a word with two divergent meanings. The difficulty disappears if the core is described in terms of "improving" or "re-contracting" rather than "blocking." A coalition of oligopolists has threat power, and hence bargaining power. They can prevent things from happening, but they do not have the sort of *constructive* economic potential that would influence the size, shape, or location of the core [5, 8, etc.].

To illustrate the divergence, even reversal, of meaning that occurs, let us consider an extreme case: a "pure bargaining" situation in which mutually profitable outcomes are possible, but only by unanimous agreement. Then any nonempty coalition is able to block any agreement (in the common English sense of "block"); moreover the no-agreement point can be blocked (in both senses) by the grand coalition. So there would appear to be no outcome that cannot be blocked. Nevertheless there is a large core. In fact, the core is so large in this case precisely *because* there is so much blocking (in the common English sense). The core, after all, expresses what coalitions can or cannot do *for* themselves, not what they can or cannot do *to* their opponents.

A more accurate term is "improve," as in: "the core is the set of outcomes that no coalition can improve upon." A classical alternative is "re-contract" (Edgeworth), which is still quite serviceable. Game theory also provides the technical terms "effective" and "dominate," which can be adapted to discussion of the core at the formal if not the heuristic level.¹

It is worth noting that in the formal theory of *simple games* (i.e., voting games), the well-established terms "block" and "blocking coalition" enjoy their common English meanings [3, 6, etc.], and that this usage is being carried over into graph theory and other mathematical fields where structures similar to simple games occur [2].

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¹ Shortly after an early version of this note was circulated, the author received a round-robin letter from four friends in Belgium, to wit: "Dear Lloyd: It's a good idea to block 'block', but can't one improve upon 'improve upon'? With best regards...." This communication provides an elegant new proof, if one is needed, of the competitiveness of CORE.

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