THE OPTIMUM STRATEGY IN BLACKJACK

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This article discusses the card game blackjack as played in the casinos of Las Vegas. The basic rules for the game are described in detail. The player's strategic problems are analyzed with the objective of finding the strategy maximizing his mathematical expectation.

A mathematical expression is derived giving a general solution to the player's problem of standing pat with a given hand versus drawing additional cards. No general solutions are possible for the other major strategic problems, however, and a detailed examination of individual situations is required. The formulas and methods for the case analysis are stated, but computational details are omitted. Similarly, the formula for the player's mathematical expectation is stated, but its numerical evaluation is not described. Detailed discussion is given to the problems arising in the combinatorial type of computations required by blackjack.

The "optimum strategy" determined by the above analysis differs substantially from the published strategies of card experts and the usual style of play in the casinos.

I. THE GAME OF BLACKJACK

BLACKJACK or twenty-one is one of the most widely played games in American homes and clubs and traditionally rivals poker for popularity in the Armed Forces. In Las Vegas, Reno, and other parts of the wide-open spaces blackjack ranks with poker, roulette, and craps as one of the four standard gambling games. Of these four, however, blackjack is by far the most neglected in the scientific literature of gambling and offers a relatively unexplored area for mathematical and statistical analysis.

It should be made clear at the outset that this paper deals exclusively with the "house" game of blackjack and not the "private" game. In the house game a representative of the gambling casino is permanent dealer, and his strategy is completely fixed by known house rules. The fixed and known nature of the dealer's strategy is vital in reducing the mathematical and computational problems in analyzing blackjack to manageable proportions.

Each gambling casino has a set of blackjack rules which agree with those of other casinos on the main points but which usually differ on details. Therefore, in selecting a variation of the game of blackjack for analysis, the best that could be done was to consider rules which are common but not universal. A presentation of these rules follows.