ABSTRACT. This article examines deception possibilities for two players in simple three-person voting games. An example of one game vulnerable to (tacit) deception by two players is given and its implications discussed. The most unexpected findings of this study is that in those games vulnerable to deception by two players, the optimal strategy of one of them is always to announce his (true) preference order. Moreover, since the player whose optimal announcement is his true one is unable to induce a better outcome for himself by misrepresenting his preference, while his partner can, this player will find that possessing a monopoly of information will not give him any special advantage. In fact, this analysis demonstrates that he may have incentives to share his information selectively with one or another of his opponents should he alone possess complete information at the outset.

Deception possibilities, wherein a deceiver misrepresents his preferences for strategic reasons, have been analyzed for a single deceiver in both two-person $2 \times 2$ games (Brams, 1977) and simple three-person voting games (Brams and Zagare, 1977). Underlying the examination of these possibilities was the assumption that the individual deceiver misrepresented his preferences to each of the remaining players in the game. However, for the class of games containing more than two players, the possibility of coalitions introduces another option into the strategic calculation of the individual deceiver, namely the opportunity of selectively sharing information about his preference structure in such a way as to increase his final payoff. More specifically, an individual deceiver, with complete information, may induce a more-preferred outcome for himself by misrepresenting his preferences to a subset rather than all the other players. Put another way, there may be a strategic advantage to fooling some of the people some of the time.

To illustrate this possibility, consider a game among three voters $V = \{v_1, v_2, v_3\}$ who must choose from among a set of three alternatives $A = \{a_1, a_2, a_3\}$. Assume that decisions in this game are rendered when at least two of the three voters vote for one of the three alternatives. To avoid
the possibility of an indeterminate outcome resulting when all three voters vote for different alternatives, assign a tie-breaking vote to one voter, say \( v_1 \), and designate that voter 'chairman'. Finally, assume that the preference scales of the three voters, or their ordinal rankings of the alternatives, are as follows:

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\begin{align*}
    v_1 &: (a_1, a_2, a_3) \\
    v_2 &: (a_2, a_3, a_1) \\
    v_3 &: (a_3, a_1, a_2)
\end{align*}
\]

Farquharson (1969) has shown that if information is complete, that is, if each voter is aware of both the preferences of the other voters and the decision rule, a sophisticated strategy, which involves the successive elimination of dominated strategies by each voter, is optimal.\(^1\) In this example, the use of sophisticated strategies by each voter results in the selection of \( a_3 \) as the outcome of the game. Note that in spite of the fact that his tie-breaking vote ostensibly places the chairman in the strongest strategic position, sophisticated strategies lead to the adoption of his least-preferred alternative. Farquharson (1969) calls this the "Paradox of the Chairman's Vote".\(^2\)

Given sophisticated voters and complete information, the chairman is without recourse to alter his strategically unfavorable position. However, as Brams and Zagare (1977) have shown, in some games, if the condition of complete information is relaxed, and it is assumed that the chairman could withhold information about his (true) preferences from the other voters and makes an (optimal) false announcement of his preferences, two additional strategies become available.\(^3\) The chairman could tacitly deceive the other voters by acting consistently with his false announcement, or he could reveal his deception by acting consistently with his true preferences. In this example, the use of tacit deception by the chairman can induce his second most-preferred alternative \( a_2 \) as the outcome, whereas if the chairman chooses to reveal his deception, \( a_1 \), his most-preferred alternative, results. Thus, in this game, the chairman has an incentive to deceive both the other voters.

Which type of deceptive strategy he should choose to obtain a more-preferred outcome than the sophisticated outcome, however, depends upon