Josep Freixas* (josep.freixas@upc.edu), Av. Bases de Manresa, 61-73, 08242 Manresa, Spain, and William S Zwicker (zwickerw@union.edu), Schenectady, NY 12308. Anonymous voting games with multiple levels of approval: classification and counting.
In this paper we consider symmetric or anonymous ( $\mathrm{j}, 2$ ) simple games, in which each voter chooses from among j ordered levels of approval and the outcome is 'yes' or 'no.' Symmetric ( $\mathrm{j}, 2$ ) simple games model some natural decision rules, such as pass-fail grading systems. The most conspicuous case arises for $\mathrm{j}=3$ which serves to model anonymous voting systems in which each voter may vote 'yes,' abstain, or vote 'no'.

Each symmetric ( $\mathrm{j}, 2$ ) simple game is determined by the set of anonymous minimal winning profiles. This makes it possible to count the possible systems for small values of $n$ and $j$, and the counts suggest some interesting patterns. The first concerns the number of anonymous voting rules with 3 levels of approval. The second exhibit a surprising symmetry certain for anonymous simple games.

In contrast to the situation for ordinary simple games, $(2,2)$ simple games in our model, these results reveal that the class of simple games with 3 or more levels of approval remains large and varied, even after the imposition of symmetry. We consider several real-world examples, suggesting some attractive alternatives supplied by the general theory. (Received September 19, 2007)

