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Mancala matrices. (English summary)
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In the paper under review the authors put a new spin on analyzing sowing games. Mancala is a game in which stones are placed in bins on a board and two players alternate taking turns distributing stones from a single bin into subsequent bins. The next player's position is related to positions in the single-player game Tchoukaillon. Each position is described as a vector, called a board vector. Optimal play of a winning Tchoukaillon board is described by a move vector. The authors present well-known results for Tchoukaillon while leading the reader along with a promise of a new way of thinking about them.

Winning board vectors were fully characterized by B. C. Jones, L. Taalman and A. Tongen [Amer. Math. Monthly **120** (2013), no. 8, 706–724; MR3096479]. A succinct proof of the recursively defined relationship between board vectors and move vectors is provided in the article being reviewed. The authors go on to present a matrix transformation that maps move vectors to board vectors. Representing the relation between move vectors and board vectors by a matrix reduces the complexity of the game analysis by eliminating the need to keep track of the order in which moves are played. Utilizing this new matrix transformation, the authors construct a map from the set of positive integers to the set of move vectors explicitly describing the unique move vector associated to a given positive integer. This positive integer represents the number of stones on the board. This is an analogous result to the map from the set of positive integers to the set of winnable board vectors presented in [op. cit.]. The authors wrap up this well-written enlightenment of Tchoukaillon results by extending them to Mancala.

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