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Suzanne I Doree* (doree@augzburg.edu). *Simultaneous and non-simultaneous Bulgarian Exchange*. Preliminary report.

We introduce Bulgarian Exchange, a two-player variant of the process dubbed Bulgarian Solitaire by Martin Gardner in 1983. Two players begin with coins arranged in piles. At each turn, a player gathers one coin from each pile and hands this collected pile to the other player. The exchange may be simultaneous or in succession. In either case the process may be viewed as an operator on the space of multi-partitions and may be visualized using Ferrers diagrams – one player deletes her longest column and the other player inserts it as her new row. We characterize the terminal states, cycle lengths, and count the number of disjoint cycles (i.e. components of the state graph) in both the simultaneous and non-simultaneous cases. This work generalizes the results of the solitaire version. (Received September 22, 2009)