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Gabor Hetyei* (ghetyei@uncc.edu), Department of Mathematics and Statistics,
UNC-Charlotte, 9201 University City Blvd., Charlotte, NC 28223. *André permutations and similar
permutation classes avoiding a single barred (generalized) pattern.*

We show that André permutations, as well as simsun permutations, may be equivalently defined as permutations avoiding a single barred (generalized) pattern on four letters. As a generalization of these findings, we describe all permutation classes avoiding a single barred generalized pattern of the form $a - \bar{b} - cd$ or the reverse or the complement thereof. Besides variants of André permutations, most of these permutation classes turn out to be equivalently definable as permutations avoiding a generalized pattern of the form $a - bc$, these were completely described by Claesson. Only three essentially different classes remain, one was described in a recent work of Burnstein and Lankham, one has a straightforward description, the third exhibits an astonishing degree of complexity. We focus on this third class which we call Foata permutations. It has a generating function in a noncommutative algebra representable as the algebra generated by the formal integration operator and by the operator arising by multiplying each function of t by the variable t . Counting them by descent sets leads to the problem of enumerating all ways to play a certain patience game. This is a report on work in progress. (Received January 17, 2011)