1096-VN-782 **Jonathan S Bloom*** (jonathan.bloom@dartmouth.edu), Hanover, NH 03755. *Some Consequences of a New Bijective Proof of the shape-Wilf-equivalence of 231 and 312.*

The concept of shape-Wilf-equivalence, first introduced by Backlin-West-Xin, has been widely studied since its introduction. We say a full rook placement on a fixed Ferrers board F *avoids* a pattern $\sigma \in S_n$ if, for every rectangle that sits inside F, the permutation corresponding to the rooks in this rectangle avoids σ in the usual sense. We then let $R_F(\sigma)$ denote the set of all rook placements on F that avoid σ. Finally, we say that σ is shape-Wilf-equivalent to τ, written $\sigma \sim \tau$, if

$$|R_F(\sigma)| = |R_F(\tau)|$$

for all Ferrers boards F. The proof that $231 \sim 312$, due to Stankova and West, is nonbijective and fairly complicated. We will first demonstrate a new straightforward bijective proof that $231 \sim 312$.

We will then discuss how this bijection can be used to simultaneously give elegant proofs of many existing enumerative results. Most notably among those is the generating function for 1342-avoiding permutations originally due to Bóna. Additionally, this bijection also provides new enumerative results both in pattern avoidance and in the study of perfect matchings and set partitions. (Received September 10, 2013)