1077-05-1851 **Abbas Mahdi Alhakim***, 3 Hammarskjold Plaza, 8th floor, New York, NY 10017. *Generating All de Bruijn Sequences Using Preference Functions of Different Spans.* Preliminary report.

A nonbinary Ford sequence, or prefer-higher sequence–is a de Bruijn sequence generated by simple rules that determine the priorities of what symbols are to be tried first, given an initial word of size n which is the order of the sequence being enerated. This set of rules is generalized by the concept of a preference function of span $n-1$, which gives the priorities of what symbols to appear after a substring of size $n-1$ is encountered. In this paper we characterize preference functions that generate full de Bruijn sequences. More significantly, We establish that any preference function that generates a de Bruijn sequence of order n also generates de Bruijn sequences of all orders higher than n, thus making the Ford sequence no special case. Consequently, we define the preference function complexity of a de Bruijn sequence to be the least possible span of a preference function that generates this de Bruijn sequence. (Received September 21, 2011)