Petr Hliněný* (hlineny@fi.muni.cz), Robert Ganian and Jan Obdržálek. On an odd case of an XP algorithm for graphs of bounded clique-width.

The "Myhill-Nerode-like" approach to designing FPT algorithms on tree-like decompositions (say, of graphs), pioneered by [Abrahamson-Fellows], has been proved very useful since. One can sometimes even use the same approach in the infinite-index case; when the number of the respective congruence classes (of the input problem) grows only polynomially with the input size. In a lucky case, one then gets an XP algorithm, but this is not automatic since one has to provide a polynomial algorithm replacing the transition function of an automaton from a finite case, too.

Complementing a stream of successfull applications of this principle, we show one very odd case - of the minLOB (min-leaf outbranching) problem on digraphs of bounded clique width. Although it is relatively straightforward to prove that the number of minLOB congruence classes on graphs with a fixed number of labels is at most polynomial, by a suitable refinement, it is also clear that the classes of this refinement cannot be rigorously combined together. Yet, a more complicated XP algorithm along these lines exists. See details in the full paper http://dx.doi.org/10.4230/LIPIcs.STACS.2011.404 . We suggest to further investigate this strange phenomenon which we do not fully understand yet. (Received September 16, 2012)