

1106-05-251      **Neil J. A. Sloane\*** (njasloane@gmail.com), 11 South Adelaide Ave, Highland Park, NJ 08904.  
*Counting ON Cells in Cellular Automata.* Preliminary report.

Not much seems to be known about the problem of determining how many cells are ON in a cellular automaton (CA) when started with a single ON cell, even for quite simple CAs. For the one-dimensional CAs defined by Rules 22, 62, 150 there are formulas, but for Rules 30 and 110 little is known. In two dimensions there are formulas for some CAs (Ulam-Warburton, Maltese Cross, Rule 942, the toothpick structure), and conjectures (Fredkin's Replicator), but in other cases (Holladay-Schrandt, Schrandt-Ulam, Y-toothpicks) there are not even guesses. On the other hand, none of these problems are known to be hard. (Received August 14, 2014)