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Joni Burnette Pirnot* (pirnotj@mccf1.edu), Department of Mathematics, 5840 26th Street West, Bradenton, FL 34207. *Two-Dimensional Languages and Their Automata.*

This research investigates certain two-dimensional shift spaces that may be associated with two-dimensional recognizable languages having the property that every block allowed in the language can be extended to a configuration of the entire plane. For this class of shift spaces, a single finite graph is introduced that is capable of representing the factor language of the two-dimensional local language and a method of recognition is defined in the sense of finite state automata recognition. Unlike one-dimensional languages, several types of transitivity may appear in two-dimensional languages, and it is shown that the graphs constructed here can provide information about the types of transitivity found in the represented two-dimensional language. Furthermore, the utilization of both horizontal and vertical transitions in the finite graph provide an illustration of the existence of periodic points in the associated two-dimensional shift space. (Received September 22, 2005)