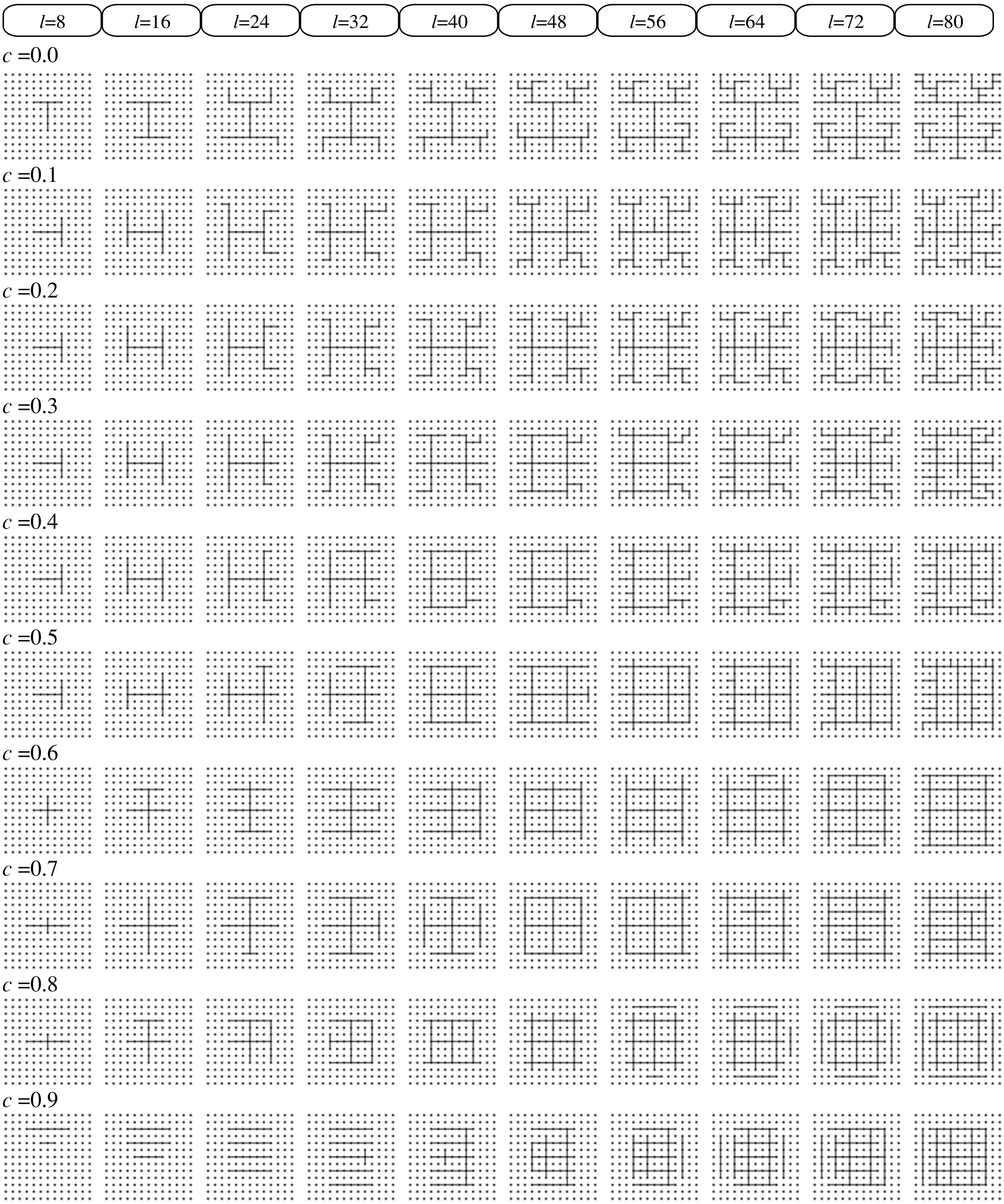

Fig. 1. Speed and shape of network growth with high-speed links.

main link. The number of high-speed links, l, varies from 1 to 312.

The travel route between demand points is either the route using only the general links, or the route via high-speed links, whichever results in the shortest travel time.

The shape of real cities is not regular, as implied by the above conditions. However, the aim of this study is to determine the fundamental characteristics of such a network. Thus, a simplified network in an ideal square city was used.

2.2 Rules of network construction order

In the ideal city, only a single high-speed link was created at a time. Assume that the high-speed links are constructed in order, one by one, and define the "period" as the length of time required to construct a single such link.

The "mean travel time" is defined as the mean travel time between all demand points. To determine the order of construction, a sequential optimum construction method, whereby high-speed links that minimize the value of mean demand time in each "period" are successively constructed, was used. Many transportation networks are, to a certain ex-