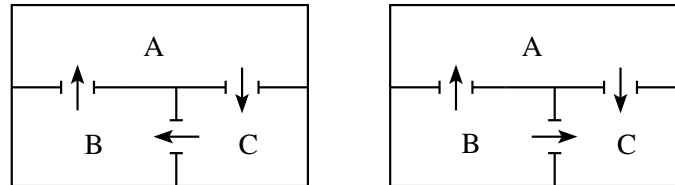


[nex104] **House of the mouse: one-way doors only**

A trained mouse lives in a house with floor plan as shown in two versions. The house has three rooms and three doors. All doors are open one way only. A bell rings at regular time intervals, prompting the mouse to make an attempt to go to an adjacent room through any open door without preference.

(a) Construct the transition matrix  $\mathbf{W}$  for both floor plans and calculate  $\mathbf{W}^s$  for  $s = 1, 2, \dots$ . Describe the resulting pattern of change in each case.

(b) Solve the left-eigenvector problem of matrix  $\mathbf{W}$  in each case and interpret the results.



**Solution:**