

Message-Passing Thought Exercise

Traffic Modelling

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Traffic flow

- we want to predict traffic flow
 - to look for effects such as congestion
- build a computer model



Simple traffic model

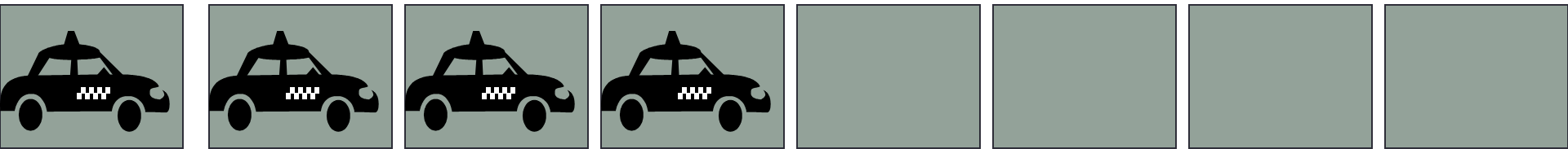
- divide road into a series of cells
 - either occupied or unoccupied
- perform a number of steps
 - each step, cars move forward if space ahead is empty



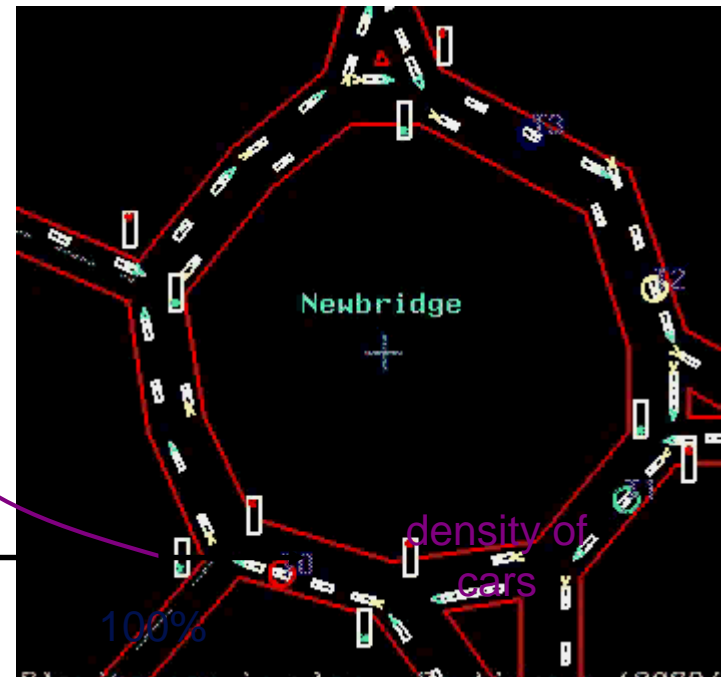
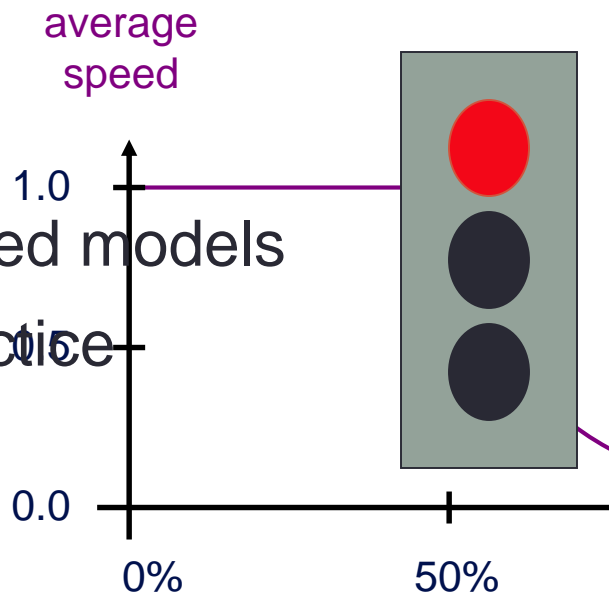
**could do this by moving
pawns on a chess board**

Traffic behaviour

- model predicts a number of interesting features
- traffic lights

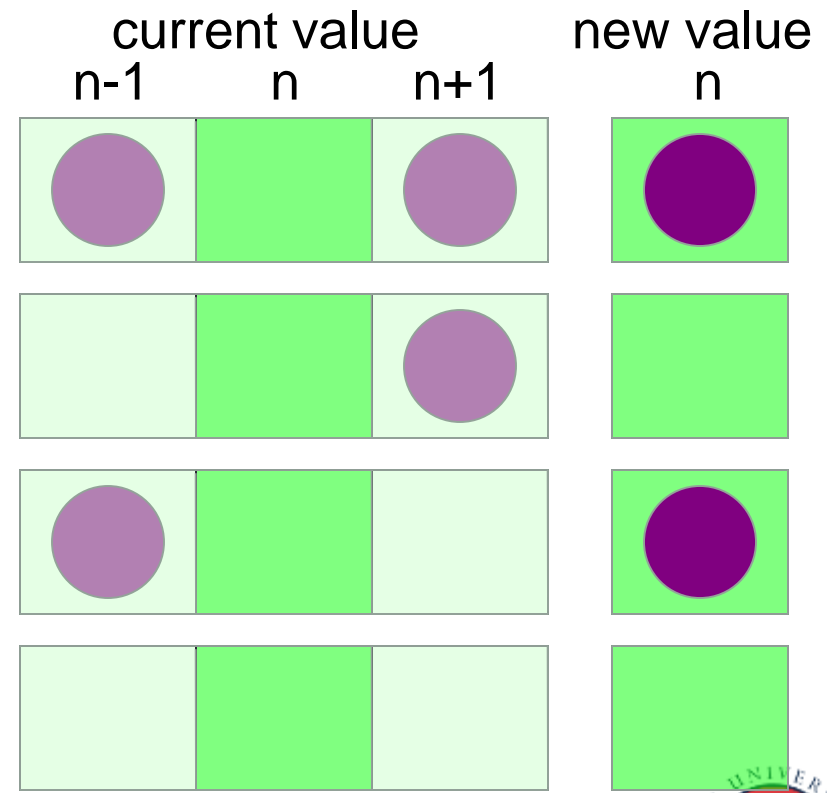
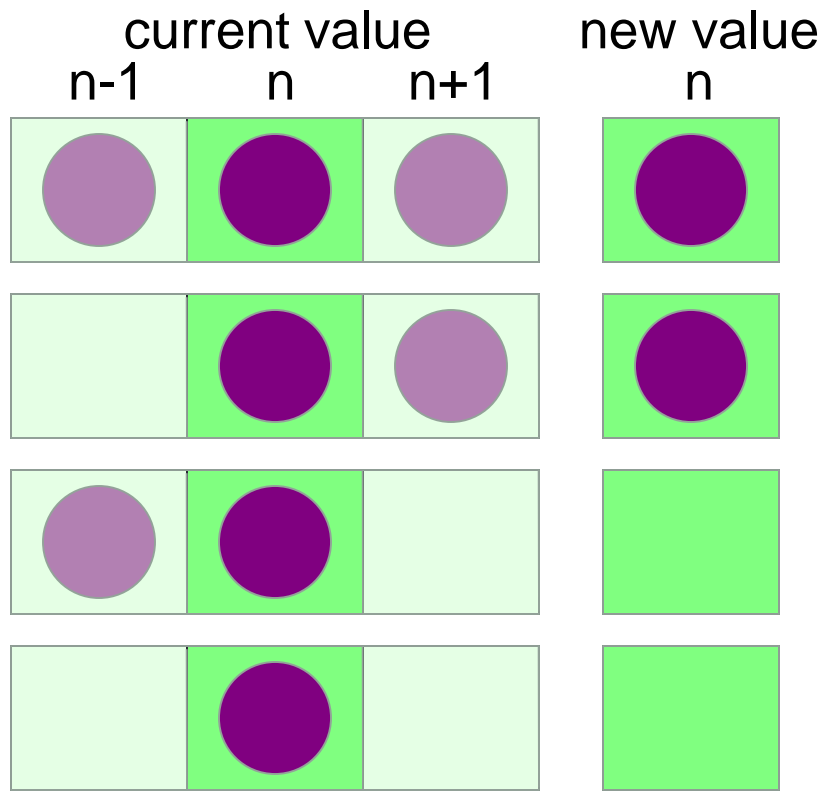


- congestion
- more complicated models are used in practice



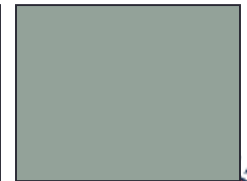
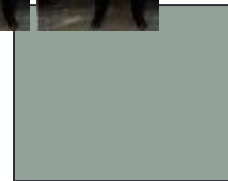
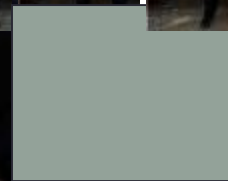
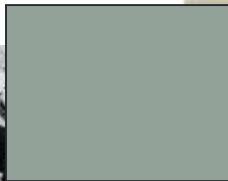
Traffic simulation

- Update rules depend on:
 - state of cell
 - state of nearest neighbours in both directions



How fast can we run the model?

- measure speed in Car Operations Per second
 - how many COPs?
- around 2 COPs
- but what about three people?
 - can they do six COPs?



Parallel Traffic Modelling

