

# Message-Passing Thought Exercise

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Traffic Modelling

EPSRC

NERC SCIENCE OF THE ENVIRONMENT

archer

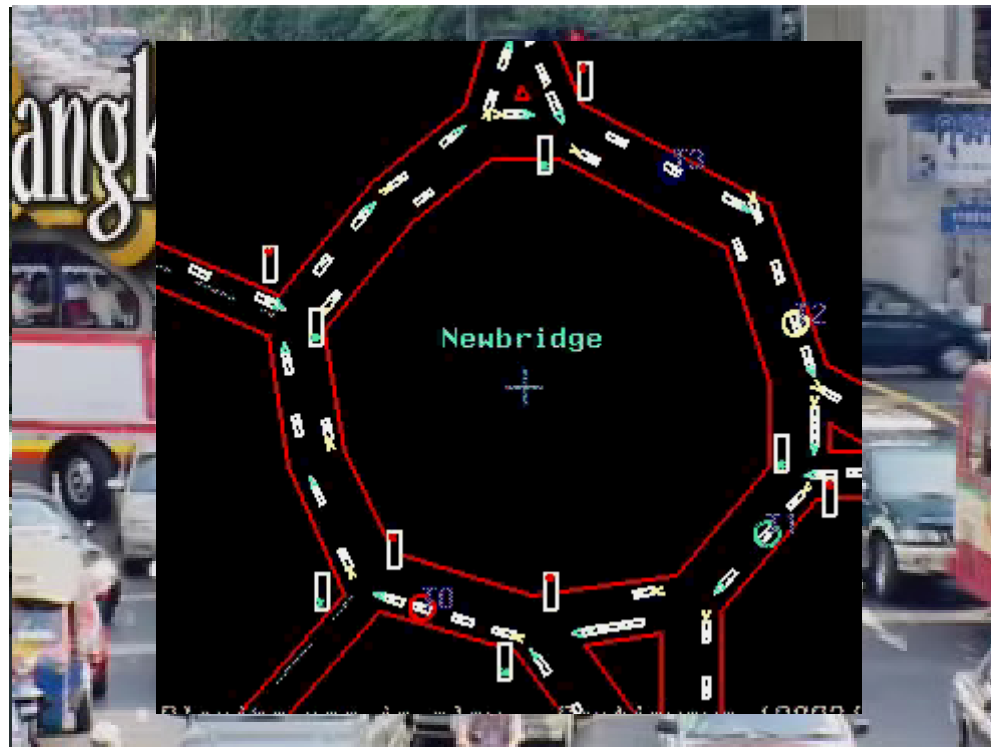
CRAY  
THE SUPERCOMPUTER COMPANY

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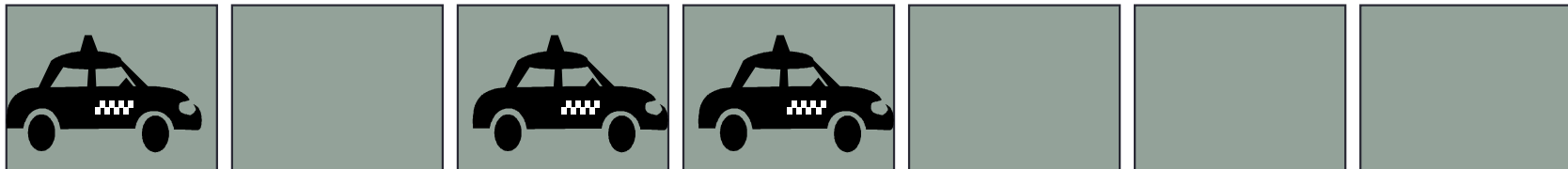
# Traffic Flow

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



# Simple Traffic Model

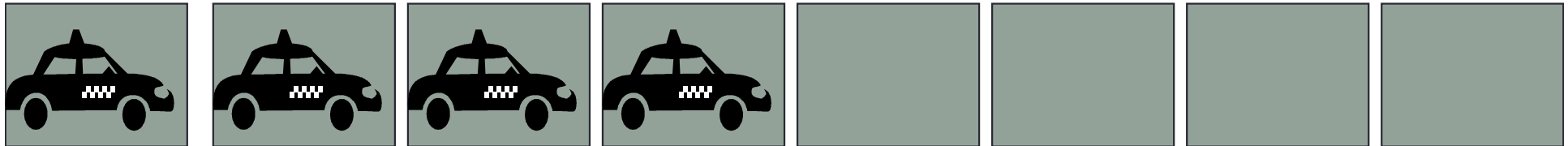
- divide road into a series of cells
  - either occupied or unoccupied
- perform a number of steps
  - each step, cars move forward if space ahead is empty



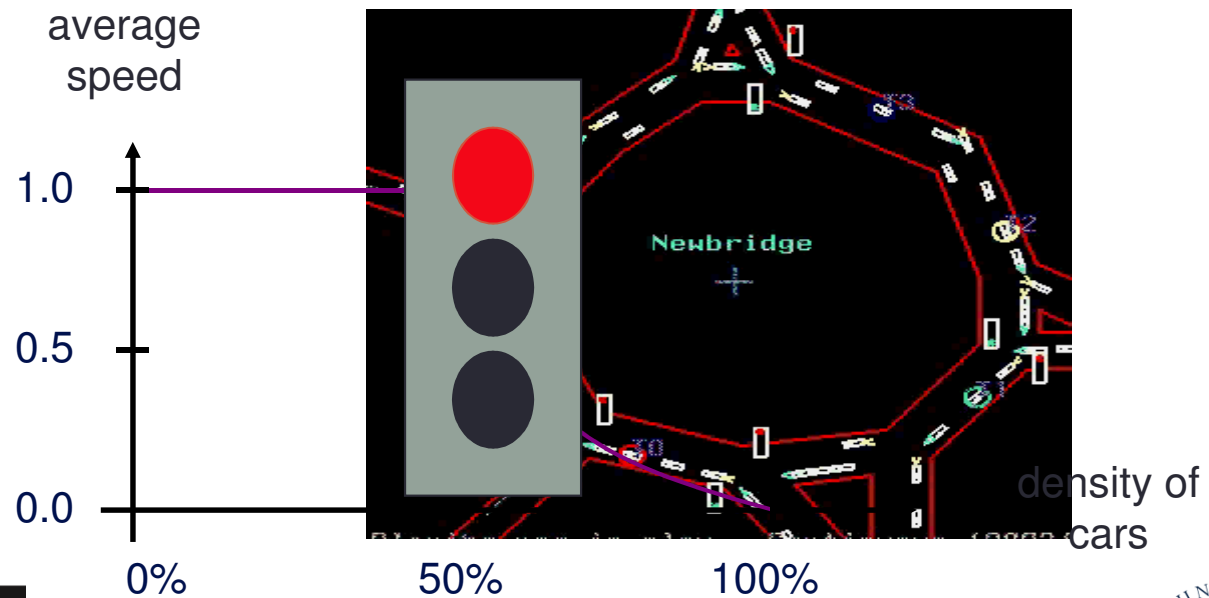
**could do this by moving  
pawns on a chess board**

# traffic behaviour

- model predicts a number of interesting features
- traffic lights



- congestion
- more complicated models are used in practice

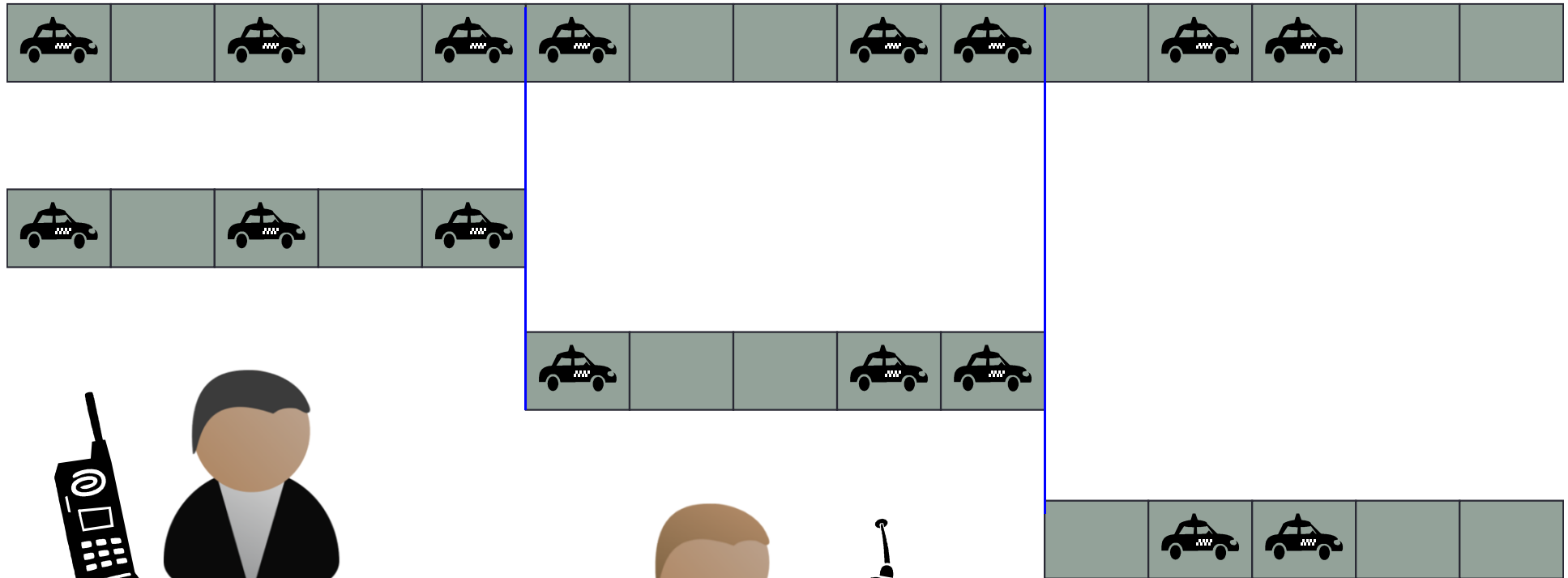


# how fast can we run the model?

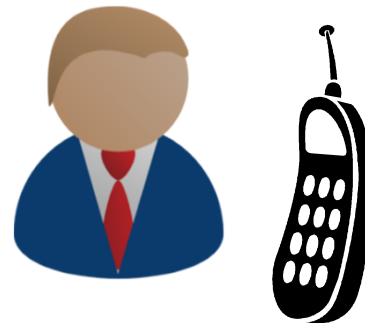
- measure speed in Car Operations Per second
  - how many COPs?
- around 2 COPs
- but what about three people?
  - can they do six COPs?



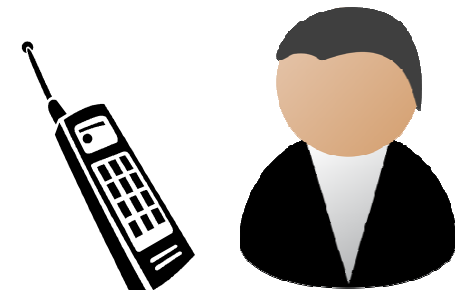
# a parallel traffic model



A



B



C

