

Parallelism Thought Exercise

Traffic Model

EPSRC

NERC SCIENCE OF THE ENVIRONMENT



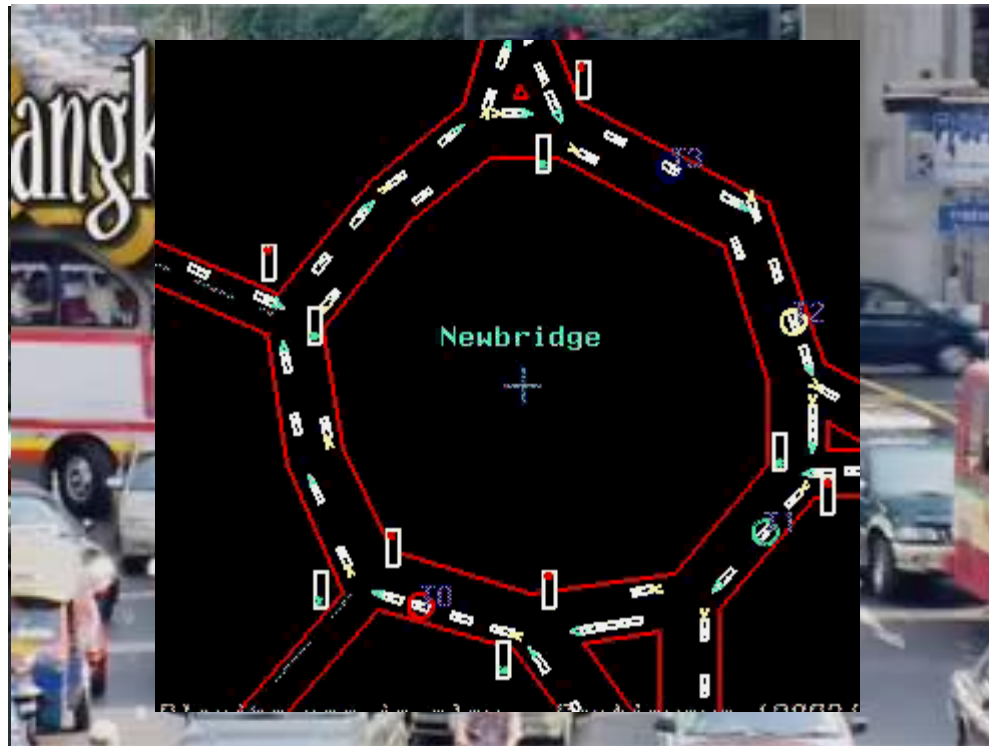
CRAY
THE SUPERCOMPUTER COMPANY

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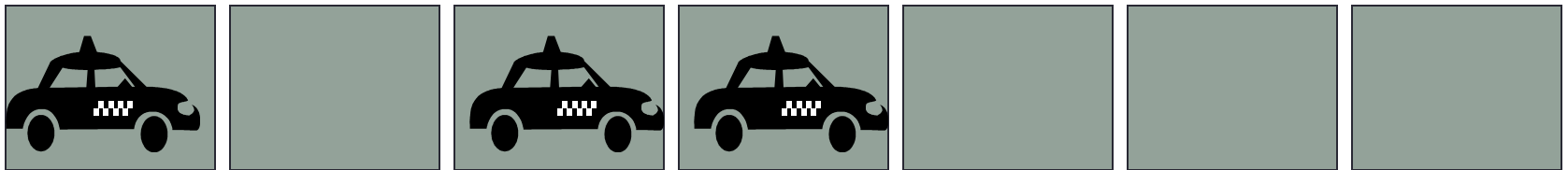
Traffic Flow

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



Simple Traffic Model

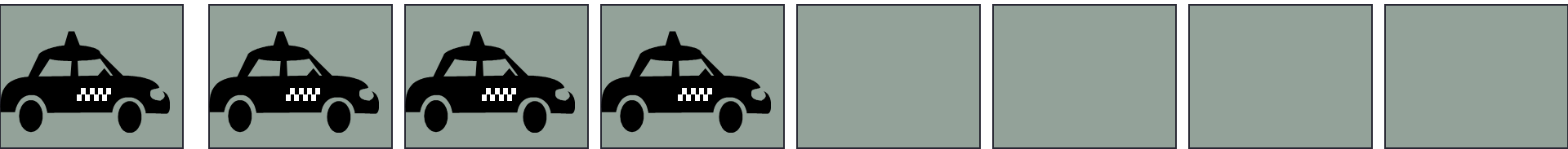
- divide road into a series of cells
 - either occupied or unoccupied
- perform a number of steps
 - each step, cars move forward if space ahead is empty



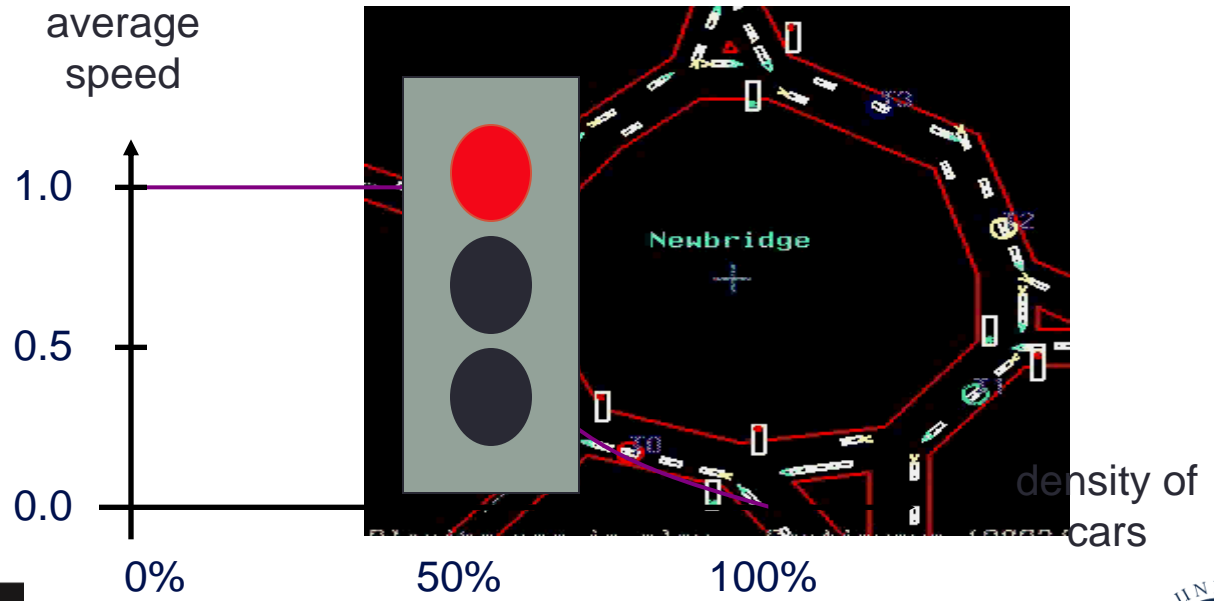
**could do this by moving
pawns on a chess board**

traffic behaviour

- model predicts a number of interesting features
- traffic lights

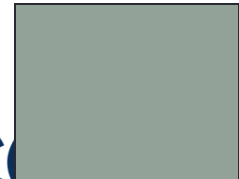
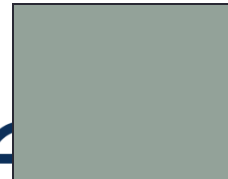


- congestion
- more complicated models are used in practice

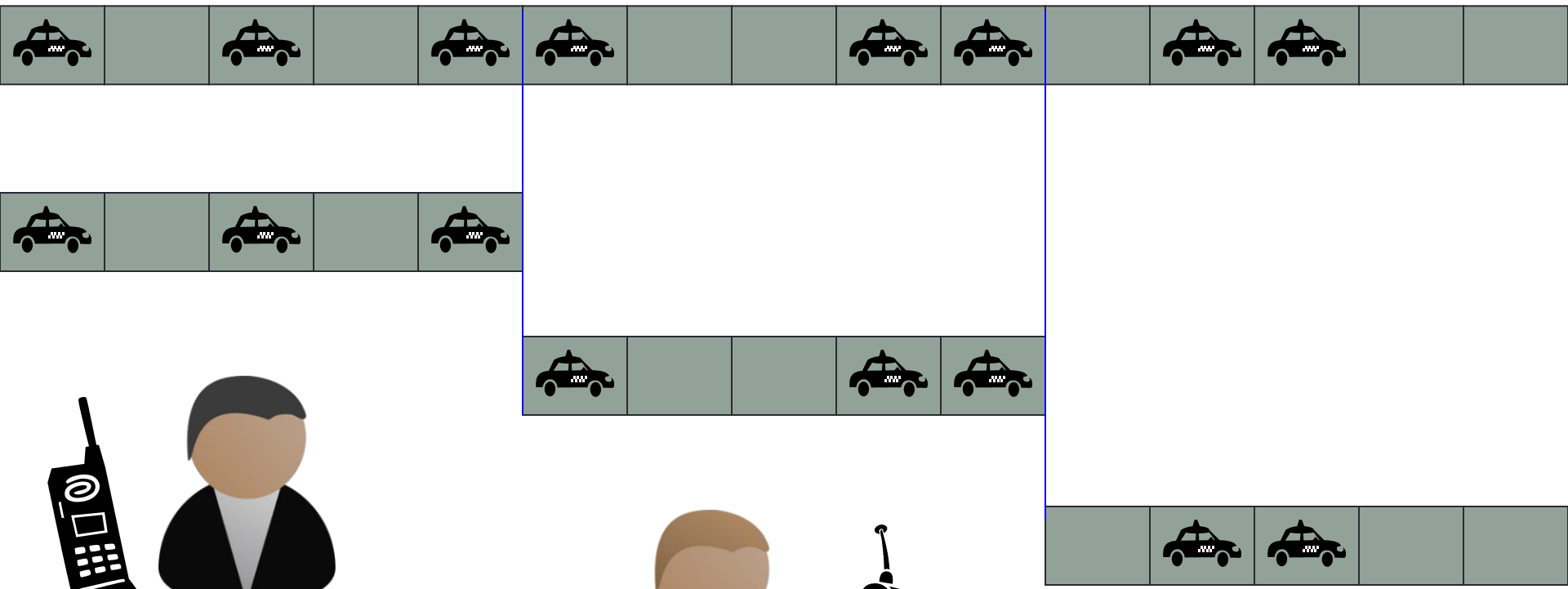


how fast can we run the model?

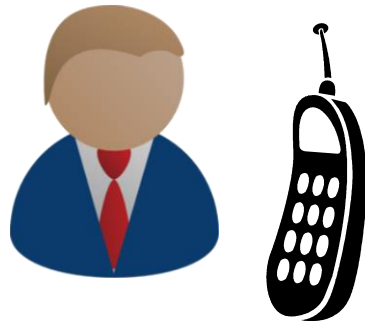
- measure speed in Car Operations Per second
 - how many COPs?
- around 2 COPs
- but what about three people?
 - can they do six COPs?



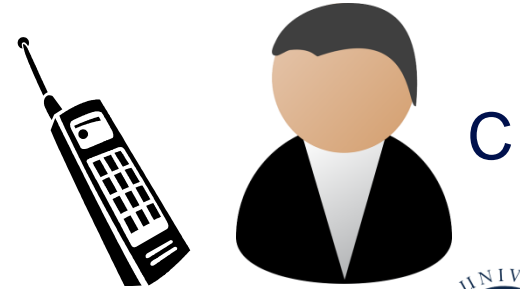
a parallel traffic model



A



B



C

