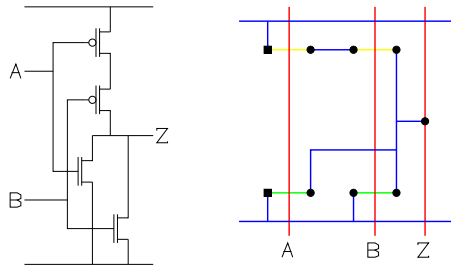


A logical approach to gate layout.

- All complementary gates may be designed using a single row of n-transistors above or below a single row of p-transistors, aligned at common gate connections.



5001

Finding an Euler Path

Computer Algorithms

- It is relatively easy for a computer to consider all possible arrangements of transistors in search of a suitable Euler path. This is not so easy for the human designer.

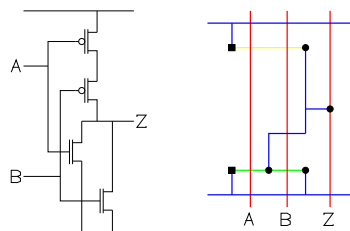
One Human Algorithm

- Find a path which passes through all n-transistors exactly once.
- Express the path in terms of the gate connections.
- Is it possible to follow a similarly labelled path through the p-transistors?
 - Yes - you've succeeded.
 - No - try again (you may like to try a p path first this time).

5003

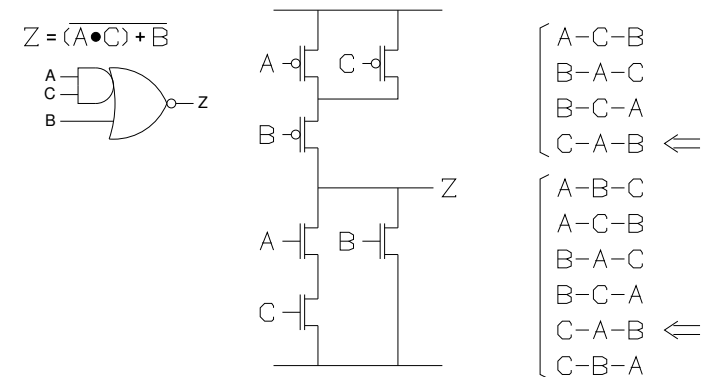
Euler Path

- For the majority of these gates we can find an arrangement of transistors such that we can butt adjoining transistors.
 - Careful selection of transistor ordering.
 - Careful orientation of transistor source and drain.
- Referred to as *line of diffusion*.



5002

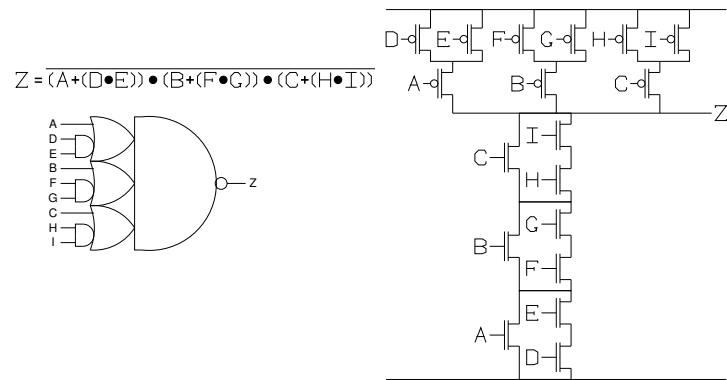
Finding an Euler Path



Here there are four possible Euler paths.

5004

Finding an Euler Path



No possible path through p-transistors.
 No re-arrangement will create a solution!