Title: Width of graph
Material: Foundations of Constraint Satisfaction, Edward Tsang
Chapter 6

Foundations of Constraint Satisfaction
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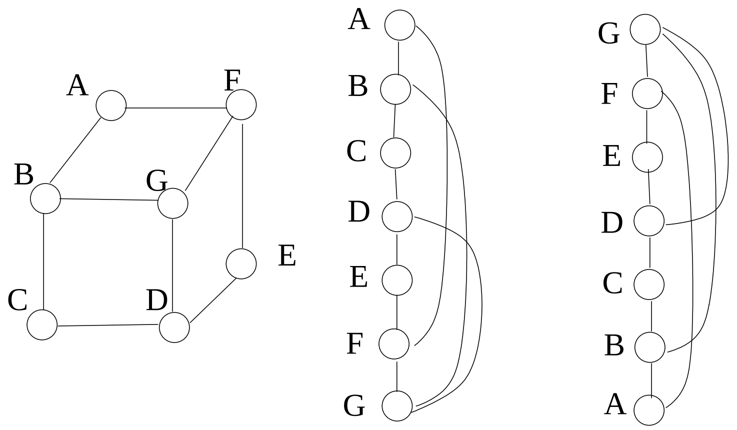
Width of graph: A graph-theoretic criterion

- Constraint graph
- Ordering of a node in an ordering *how many possible orderings?*
- Width of an ordering
- Width of the graph (independent of the ordering)

Minimal width ordering



Reduces the chance of backtracking: variables that have more unassigned values depending on them are labeled first. Variables at the front of the ordering are in general more constrained..

Finding minimum width ordering: $\mathcal{O}(n^2)$.

Freuder'82

Procedure Width of a graph G:
Remove from the graph all nodes not connected to any others
Set $k \leftarrow 0$
Do while there are nodes left in the graph:
    Set $k \leftarrow (k+1)$
    Do while there are nodes not connected to more than k others:
        Remove such nodes from the graph, along
        with any edges connected to them.
Return k
end

The minimal width ordering of the nodes is obtained by taking the nodes in the reverse order than they were removed.