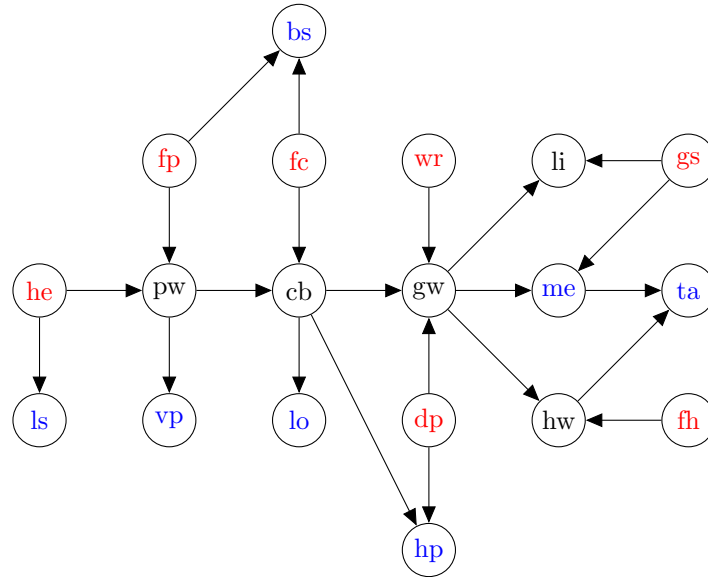


1 Graphical model



- Nodes that indicate failure coloured red.
- Nodes that may be observed coloured blue.

2 Variable list

Failures (you're trying to detect these):

0. **he**: Have mains electricity
1. **fp**: Fried power supply unit
2. **fc**: Fried circuit board
3. **wr**: Water in reservoir
4. **dp**: Dead pump
5. **fh**: Fried heating element
6. **gs**: Group head gasket forms seal

Mechanism (these are unobservable):

7. **pw**: Power supply unit works
8. **cb**: Circuit board works

9. **gw**: Get water out of group head
10. **hw**: Get hot water out of group head
11. **li**: Leaks during infusion

Diagnostic (these are the tests the mechanic can run - observable):

12. **ls**: Room lights switch on
13. **vp**: A voltage is measured across power supply unit
14. **bs**: Burning smell
15. **lo**: Power light switches on
16. **hp**: Can hear pump
17. **me**: Makes espresso
18. **ta**: Makes a hot, tasty espresso

3 Conditional probability distributions

- $P(\mathbf{he})$
- $P(\mathbf{fp})$
- $P(\mathbf{fc})$
- $P(\mathbf{wr})$
- $P(\mathbf{dp})$
- $P(\mathbf{fh})$
- $P(\mathbf{gs})$

- $P(\mathbf{pw} \mid \mathbf{he}, \mathbf{fp})$
- $P(\mathbf{cb} \mid \mathbf{pw}, \mathbf{fc})$
- $P(\mathbf{gw} \mid \mathbf{cb}, \mathbf{wr}, \mathbf{dp})$
- $P(\mathbf{hw} \mid \mathbf{gw}, \mathbf{fh})$
- $P(\mathbf{li} \mid \mathbf{gw}, \mathbf{gs})$

- $P(\mathbf{ls} \mid \mathbf{he})$
- $P(\mathbf{vp} \mid \mathbf{pw})$

- $P(\text{bs} \mid \text{fp}, \text{fc})$
- $P(\text{lo} \mid \text{cb})$
- $P(\text{hp} \mid \text{cb}, \text{dp})$
- $P(\text{me} \mid \text{gw}, \text{gs})$
- $P(\text{ta} \mid \text{me}, \text{hw})$