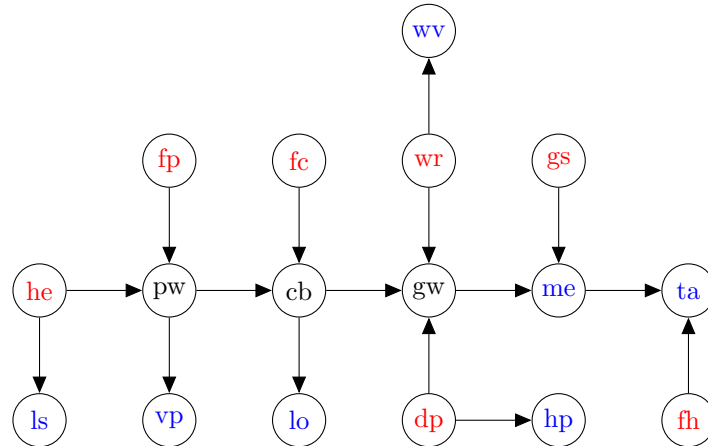


## 1 Graphical model



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

## 2 Variable list

Failures (you're trying to detect these):

0. **he**: No electricity
1. **fp**: Fried power supply unit
2. **fc**: Fried circuit board
3. **wr**: Water reservoir empty
4. **gs**: Group head gasket seal broken
5. **dp**: Dead pump
6. **fh**: Fried heating element

Mechanism (these are unobservable):

7. **pw**: Power supply unit works
8. **cb**: Circuit board works
9. **gw**: Get water out of group head

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

10. **ls**: Room lights switch on
11. **vp**: A voltage is measured across power supply unit
12. **lo**: Power light switches on
13. **wv**: Water visible in reservoir
14. **hp**: Can hear pump
15. **me**: Makes espresso
16. **ta**: Makes a hot, tasty espresso

### 3 Conditional probability distributions

- $P(\text{he})$
- $P(\text{fp})$
- $P(\text{fc})$
- $P(\text{wr})$
- $P(\text{gs})$
- $P(\text{dp})$
- $P(\text{fh})$
- $P(\text{pw} \mid \text{he}, \text{fp})$
- $P(\text{cb} \mid \text{pw}, \text{fc})$
- $P(\text{gw} \mid \text{cb}, \text{wr}, \text{dp})$
- $P(\text{ls} \mid \text{he})$
- $P(\text{vp} \mid \text{pw})$
- $P(\text{lo} \mid \text{cb})$
- $P(\text{wv} \mid \text{wr})$
- $P(\text{hp} \mid \text{dp})$
- $P(\text{me} \mid \text{gw}, \text{gs})$
- $P(\text{ta} \mid \text{me}, \text{fh})$

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