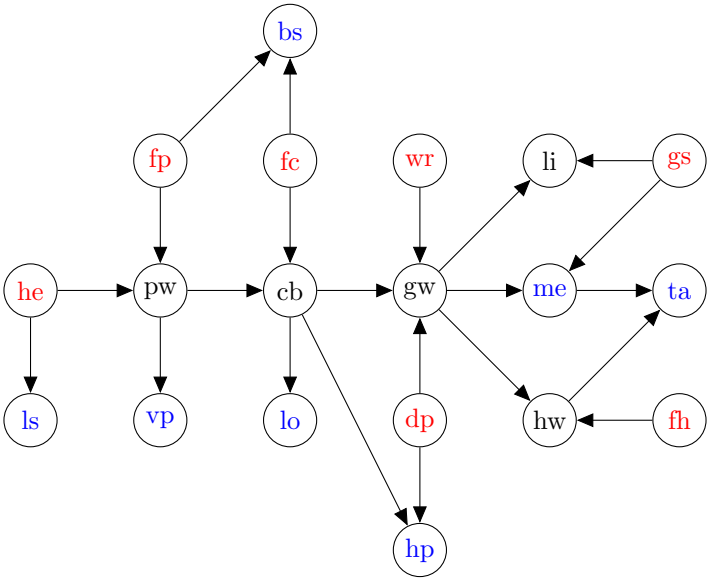
1 Graphical model



- 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

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

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

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

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