DAG Example

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Lauritzen and Spiegehalter (1988) presents the following narrative:

- Shortness–of–breath (dyspnoea) may be due to tuberculosis, lung cancer or bronchitis, or none of them, or more than one of them.

- A recent visit to Asia increases the chances of tuberculosis, while smoking is known to be a risk factor for both lung cancer and bronchitis.

- The results of a single chest X–ray do not discriminate between lung cancer and tuberculosis, as neither does the presence or absence of dyspnoea.
A formalization of this narrative

\[ p(V) = p(A)p(T \mid A) \cdot p(S)p(L \mid S)p(B \mid S) \cdot p(E \mid T, L)p(D \mid E, B)p(X \mid E) \]