

	S1	S2	S3	S4
S1	0.94	0	0.06	0
S2	0.5	0.155 ?	0	0.345
S3	0.44	0	0.56	0
S4	0	0.165	0.50	0.345

Calculations on
next page

$$S_1 \rightarrow S_1$$

$$\frac{1}{2}(c|r, \gamma s) + \frac{1}{2}(r|c, \gamma s, \omega) = 0.94$$

$$\frac{1}{2}(0.88) + \frac{1}{2}(1) = 0.94$$

$$S_1 \rightarrow S_2$$

$$\frac{1}{2}P(c|r, \gamma s, \omega) + \frac{1}{2}P(r|c, \gamma s, \omega)$$

$$\frac{1}{2}(0) + \frac{1}{2}(0) = 0$$

$$S_1 \rightarrow S_3$$

$$\frac{1}{2}P(\neg c|\neg r, \gamma s, r) + \frac{1}{2}P(r|\neg c, \gamma s, \omega)$$

$$\frac{1}{2}(0.12) + \frac{1}{2}(0) = 0.06$$

$$S_2 \rightarrow S_2$$

$$\frac{1}{2}(c|\neg r, \gamma s) + \frac{1}{2}(r|c, \gamma s, \omega)$$

$$\frac{1}{2}(0.31) + \frac{1}{2}(1) = 0.655$$

$$S_2 \rightarrow S_1$$

$$\frac{1}{2}(c|0) + \frac{1}{2}(r|c, \gamma s, \omega)$$

$$\frac{1}{2}(0) + \frac{1}{2}(1) = 0.5$$

$$S_2 \rightarrow S_3$$

$$\frac{1}{2}(\neg c|\neg r, \gamma s, r) + \frac{1}{2}(r|\neg c, \gamma s, \omega)$$

$$\frac{1}{2}(0.69) + \frac{1}{2}(0) = 0.345$$

$s_3 \rightarrow s_3$

$(\tau_C | \tau_S, r) \quad (r | \tau_C, \tau_S, \omega)$

$$\frac{1}{2}(0.12) + \frac{1}{2}(1) = 0.56$$

$s_3 \rightarrow s_4$

$(\tau_C | \quad \quad \quad (\tau_r | \tau_C, \tau_S, \omega)$

X

$$+ \frac{1}{2}(0)$$

$s_3 \rightarrow s_1$

$r | \quad \quad \quad c | \tau_S, r$

X

$$+ \frac{1}{2}(0.88) = 0.44$$

$s_4 \rightarrow s_4$

$(\tau_C | \tau_r, \tau_S) \quad (\tau_r | \tau_C, \tau_S, \omega)$

$$\frac{1}{2}(0.69) + \frac{1}{2}(0)$$

$$= 0.345$$

$s_4 \rightarrow s_2$

$c | \tau_S, \tau_r \quad \tau_r | \quad \quad \quad$

$$\frac{1}{2}(0.8) + 0$$

$$= 0.155$$

$s_4 \rightarrow s_3$

$\tau_C | \quad \quad \quad + \frac{1}{2}(r | \tau_C, \tau_S, \omega)$

$$0$$

$$+ \frac{1}{2}(1)$$

$$= 0.5$$

a) $\vec{P}(C|TS, r)$

$P(C c)$	$P(C)$	$P(r c)$	$P(TS TC)$	$P(C)$	$P(r TC)$
0.9	0.5	0.8	0.3	0.5	0.2

0.36

0.05

$\alpha = \frac{1}{0.36 + 0.05} = 2.48$

$\rightarrow 0.36$ $\rightarrow 0.05$

$\rightarrow 0.88, 0.127$

?

★

b) $\vec{P}(C|TS, TC)$

$P(C)$	$P(TS C)$	$P(TC C)$	$P(TC)$	$P(TS TC)$	$P(C TC)$
0.5	0.9	0.2	0.5	0.5	0.8

0.09

$\alpha = \frac{1}{0.29} = 3.44$

0.2

$0.09 \times 3.44 = \langle 0.31, 0.69 \rangle$

0.2×3.44

c) $\vec{P}(R|c, TS, w)$

$P(r c)$	$P(c)$	$P(TS c)$	$P(w TS, r)$
0.8	0.5	0.9	0.9 = 0.72

$P(TC c)$	$P(c)$	$P(TS c)$	$P(w TS, TC)$
0.2	0.5	0.9	0

$\alpha = \frac{1}{0.72} = 1.38$

$\langle 1, 0 \rangle$

Choose a random State

$$D) \vec{P}(R|T_C, T_S, \omega)$$

$$P(R) \cdot P(T_C) \cdot P(T_S|T_C) \cdot P(\omega|T_C, T_S)$$

\times \times \times \times

0.2 $0.9 = 0.18$

$$P(T_C) \cdot P(T_S|T_C) \cdot P(\omega|T_C, T_S)$$

\times \times \times

0.8 $0 = 0$

$$\alpha = \frac{1}{0.18} = 5.55$$

$$\langle 1.18, 0.7 \rangle \langle 1, 0.7 \rangle$$

B

$s_1 \rightarrow s_2$

$$\frac{1}{2} P(G|R, T_S) + \frac{1}{2} P(R|G, T_S, \omega)$$

$$0 +$$