```
Incr_Pol_Free = DRPF*(Gov_Pol_Free-Pol_Freedom)/Pol_Free_RT
{Increase in Political Freedom (freedom/month)}
Inc_Pop_Des_Free
=(.25*(Opp_Exec+Opp_Leg+Pol_Protest)+.5*(Rel_Infl+Prop_Infl)+(Trad_P
op_Des_Free-Pop_Des_Free))/TTPD
{Increase in Popular Desired Freedom (freedom/month)}
Inc_Rel_Eff = N_I_R_E*EORE
{Increase in Religious Effort (fraction/month)}
Leg_Resp_Time = 15
{Legislative Response Time (months)}
NCT2 = 12
{Noise Correlation Time for PinkNoise2 (months)}
Need_for_Prop =
(Exe_Des_Eco_Wel-Pop_Des_Eco_Wel+Exe_Des_Freedom-Pop_Des_Free)/
1.414
{Need for Propaganda (composite)}
Noise_Correl_Time =6
{Noise Correlation Time for PinkNoise (months)}
Normal_Prod = 118.0+Pink_Noise2+Prod_Shock
{Normal Production (output/person/month or welfare)}
N_I_R_E = .075
{Normal Increase in Religious Effort (fraction/month)}
N_Siez_Infl = .012
{Normal Executive Seizure of Legislative Influence (fraction/month)}
Opp_Exec =
MAX((((P_E_Disaffection+P_E_Discontent+P_P_Discontent+P_P_Disaffec
tion)/1.414)+2.0*Turmoil)*EEW_Protest*EPF_Protest,0)
{Opposition to Executive (composite)}
Opp_Leg =
MAX((((P_E_Discontent+P_E_Disagreement+P_P_Discontent+P_P_Disagre
ement)/1.414)+2.0*Turmoil)*EEW_Protest*EPF_Protest,0)
{Opposition to Government (composite)}
Output_Aris = OF_Aris*Production
{Output to Aristocrats (wealth/month)}
Output_Pop = OF_Pop*Production
{Output to Population (welfare or output/person/month)}
Policy_RT = 3
{Policy Reaction Time (months)}
Political_Legislat =
((Pol_Protest*Pop_Leg_Infl)+(A_P_Discontent*Aris_Leg_Infl)+(E_P_Dis
content*Exe_Leg_Infl))/Leg_Resp_Time
```

{Political Legislation (freedom/month)}
Pol_Free_RT = 12
{Poltical Freedom Response Time (months)}
Pol_Initiative =
(Exe_Des_Freedom*Exec_Power)+(Pol_Law*(1-Exec_Power))
{Poltical Initiative of the administration (freedom)}
Pol_Protest = EPF_Protest*EEW_Protest*P_P_Discontent
{Poltical Protest (freedom)}
Pol_Turmoil = TPP_Unrest-Ave_Pol_Unrest
{Political Turmoil (freedom)}
Pop_Seiz_LI = IF TIME <0 THEN 0 ELSE 1*EGOPLI+EPPLI
{Popular Seizure of Legislative Influence (fraction/month)}
Pop_Unrest_TC = 12
{Political Unrest Time Constant (months)}
Production = Normal_Prod*Qual_Land*Ext_Factors*EEWP*ECOP*EPFP
{Production (output/person/month or welfare)}
Prod_Shock = STEP(-0,75)
Prop_Infl = Propaganda*Exec_Power
{Influence of Propaganda on populace (composite)}
Prop_RT = 12
{Propaganda Response Time (months)}
P_E_Disaffection = MAX(Economic_Law-Perc_Out_Pop,0)
{Popular Economic Disaffection with executive (welfare)}
P_E_Disagreement = MAX(Pop_Des_Eco_Wel-Economic_Law,0)
{Popular Economic Disagreement with government policy (welfare)}
P_E_Discontent = Pop_Des_Eco_Wel-Perc_Out_Pop
{Popular Economic Discontent (welfare)}
P_P_Disaffection =
((Pol_Law-Gov_Pol_Free)*(Pol_Law-Gov_Pol_Free))^.5
{Popular Political Disaffection with executive (freedom)}
P_P_Disagreement = MAX(Pop_Des_Free-Pol_Law,0)
{Popular Political Disagreement with government policy (freedom)}
P_P_Discontent = Pop_Des_Free-Gov_Pol_Free
{Popular Political Discontent (freedom)}
Qual_Land = 1
{Quality of Land (fraction)}
Rel_Infl =
(Rel_Des_Eco_Wel-Pop_Des_Eco_Wel+Rel_Des_Free-Pop_Des_Free)*.72*
Rel_Effort
{Religious Influence on populace (freedom/welfare)}
RE_DT = 20

{Religious Effort Decay Time (months)}
STDV =0
{Standard Deviation of Pink Noise (non-dimensional)}
STDV2 =0
{Standard Deviation of Pink Noise2 (non-dimensional)}
TATO = 50
Tot_Protest = Pol_Protest+Eco_Protest
{Total Protest of populace (composite)}
TPE_Unrest = P_E_Discontent+P_E_Disaffection+P_E_Disagreement
{Totol Popular Economic Unrest (welfare)}
TPP_Unrest = P_P_Disagreement+P_P_Disaffection+P_P_Discontent
{Total Popular Political Unrest (freedom)}
Trad_Aris_Des_Free = 35
{Traditional Aristocratic Desired Freedom for populace (freedom)}
Trad_Opp = Trad_Opp_Gov+Trad_Opp_Exec
{Traditional Opposition to both executive and government (composite)}
TTPD = 40
Turmoil =(Pol_Turmoil+Eco_Turmoil)/1.414
{Turmoil (composite)}
Unhappiness
=(P_E_Discontent*P_E_Discontent)^.5+(A_E_Discontent*A_E_Discontent)
^.5+(P_P_Discontent*P_P_Discontent)^.5+(A_P_Discontent*A_P_Disconte
nt)^.5
{Unhappiness (composite)}
White_Noise = STDV*(24*Noise_Correl_Time/DT)^.5*(RANDOM-.5)
WTNS2 = STDV2*(24*NCT2/DT)^.5*(RANDOM-.5)
{White Noise for Pink Noise2 (non-dimensional)}

Table Functions

DRPF = graph(Pol_Freedom)
 0.0 -> 0.0
10.000 -> 0.120
20.000 -> 0.300
30.000 -> 0.610
40.000 -> 0.910
50.000 -> 1.020
60.000 -> 1.030
70.000 -> 0.990
80.000 -> 0.800
90.000 -> 0.400

100.000 -> 0.0
EATDLI = graph(A_Tot_Discontent)
-72.000 -> 0.01000
-64.800 -> 0.00905
-57.600 -> 0.00805
-50.400 -> 0.00695
-43.200 -> 0.00595
-36.000 -> 0.00500
-28.800 -> 0.00410
-21.600 -> 0.00310
-14.400 -> 0.00210
-7.200 -> 0.00105
0.0 -> 0.0
ECCADF = graph(Climate_Opp)
0.0 -> 0.0
0.400 -> 0.0
0.800 -> 0.0
1.200 -> -0.0700
1.600 -> -0.140
2.000 -> -0.260
2.400 -> -0.360
2.800 -> -0.480
3.200 -> -0.600
3.600 -> -0.780
4.000 -> -0.980
ECOP = graph(Climate_Opp)
0.0 -> 1.000
0.500 -> 1.000
1.000 -> 0.990
1.500 -> 0.970
2.000 -> 0.940
2.500 -> 0.890
3.000 -> 0.820
3.500 -> 0.680
4.000 -> 0.530
4.500 -> 0.340
5.000 -> 0.0
EEPO = graph(Exec_Power)
0.0 -> 1.000
0.100 -> 1.000
0.200 -> 0.998