

## Appendix B: Description of Model Structure

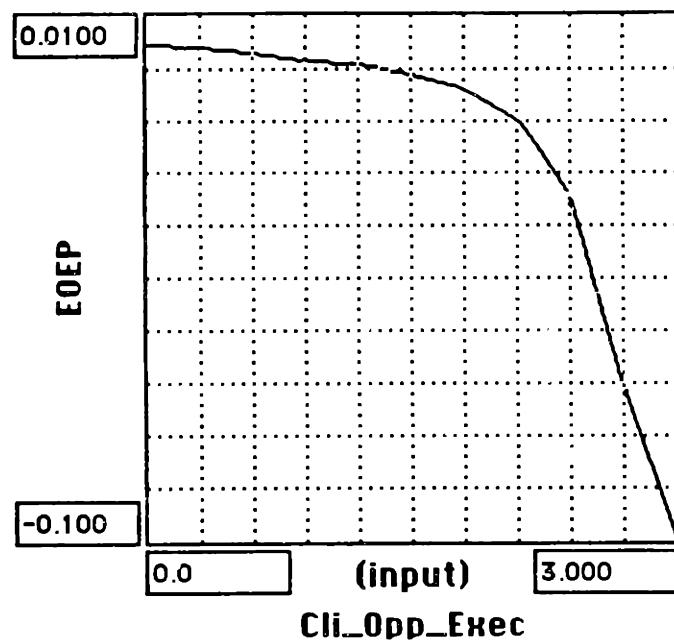


Figure B.3.1: Effect of Opposition on Executive Power (EOEP)

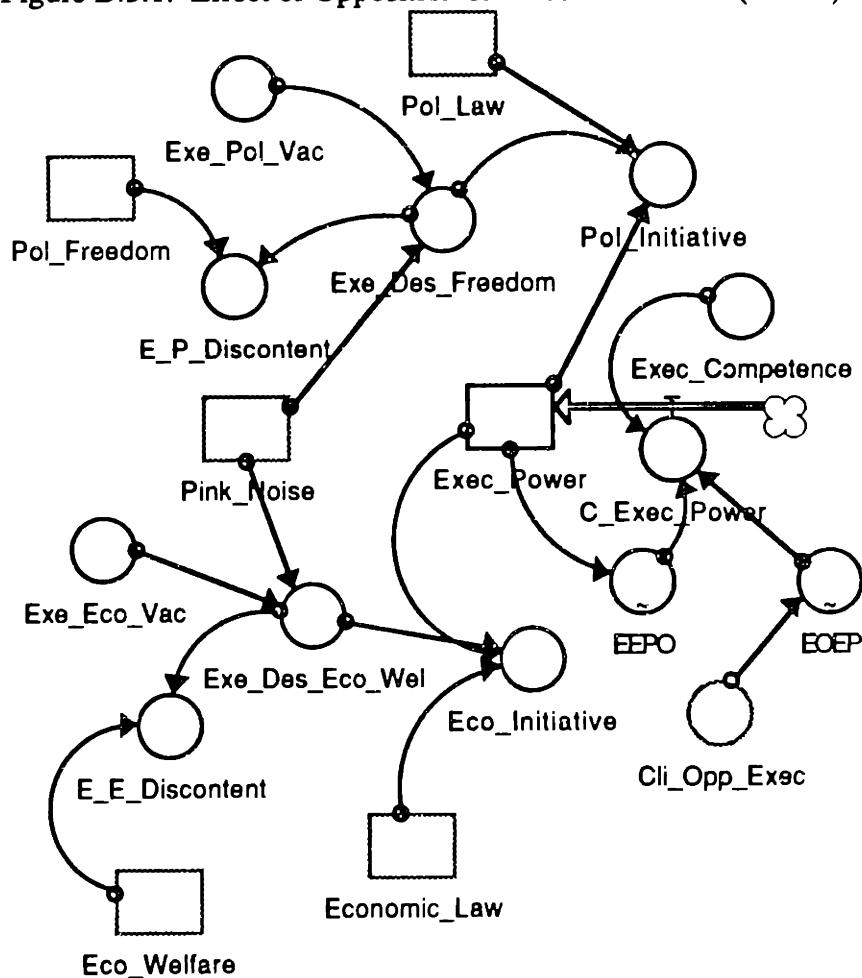


Figure B.3.2: Executive Desires and Power

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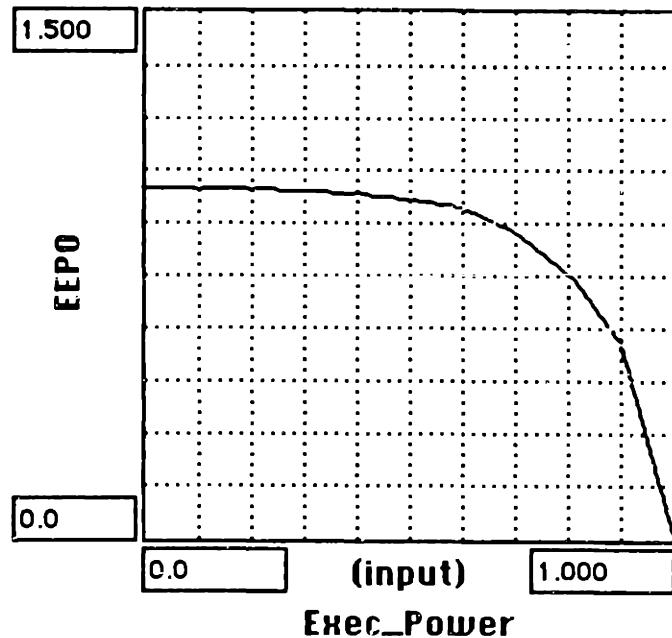


Figure B.3.3: Effect of Executive Power Overexpansion (EEPO)

### *Propaganda (Propaganda)*

Propaganda is measured in composite units (both economic and political dissonance similar to religious influence). It may be either positive or negative, depending upon the particular mix of popular and executive norms. Here it is defined as the direction and amount of influence an executive with executive power (Exec\_Power) equal to one could exert on the determination of popular norms (Pop\_Des\_Free, Pop\_Des\_Eco\_Wel). In order to determine the actual level of propaganda influence (Prop\_Infl) Propaganda is multiplied by the value of Exec\_Power.

Propaganda is a smooth function of the need for propaganda perceived by the executive (Need\_for\_Prop). As has been mentioned already, propaganda consists of much more than the distribution of biased information. Political patronage of special interests, selective enforcement of policies, and careful suppression of dissidents can also be considered types of propaganda under this formulation. All of these things take time to implement. The need for propaganda is determined by comparing the norms of the executive with those of the populace.

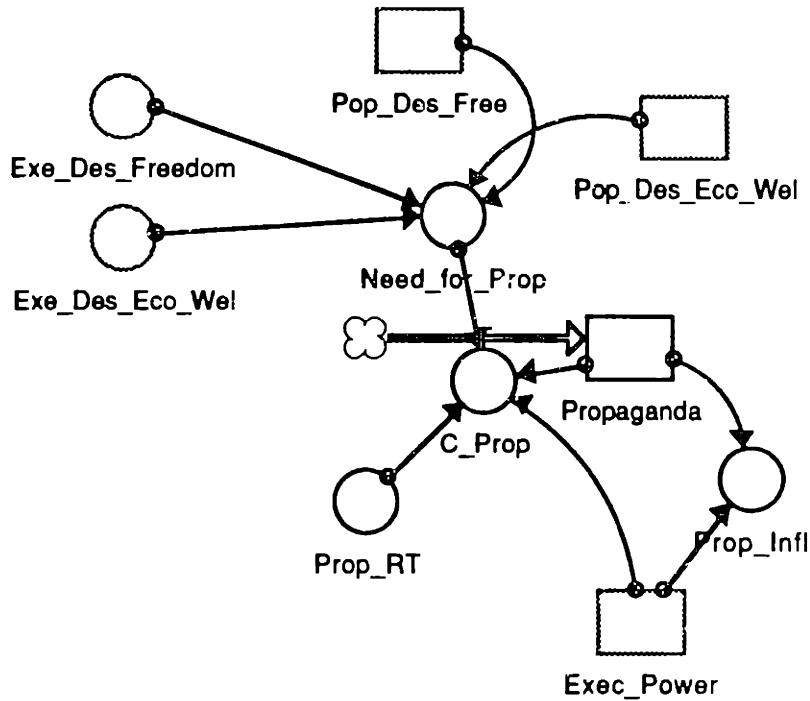


Figure B.3.4: Propaganda

#### B.4 Economic Considerations

##### *Production (Production)*

Total production of goods and services in this system is determined by multiplying the normal production level (Normal\_Prod) by multipliers to account for the effects of freedom (Pol\_Freedom), welfare (Eco\_Welfare), and opposition to the legislative and executive branches of government (Climate\_Opp). As freedom in society decreases, innovation is stifled and motivation falls. This is accomplished with the table function EPFP (Effect of Political Freedom on Productivity) (Figure B.4.2). Similarly, as welfare decreases, workers are less productive due to fewer economic incentives and physical deterioration--see EEW\_P (Effect of Economic Welfare on Productivity) (Figure B.4.3). Climate of opposition (Climate\_Opp) is a measure of the level of overt violence and disruptive action being taken against the establishment and thus impedes normal productive capacity--see ECOP (Effect of Climate of Opposition on Production). Finally, noise can be added to production if desired via Pink\_Noise2.

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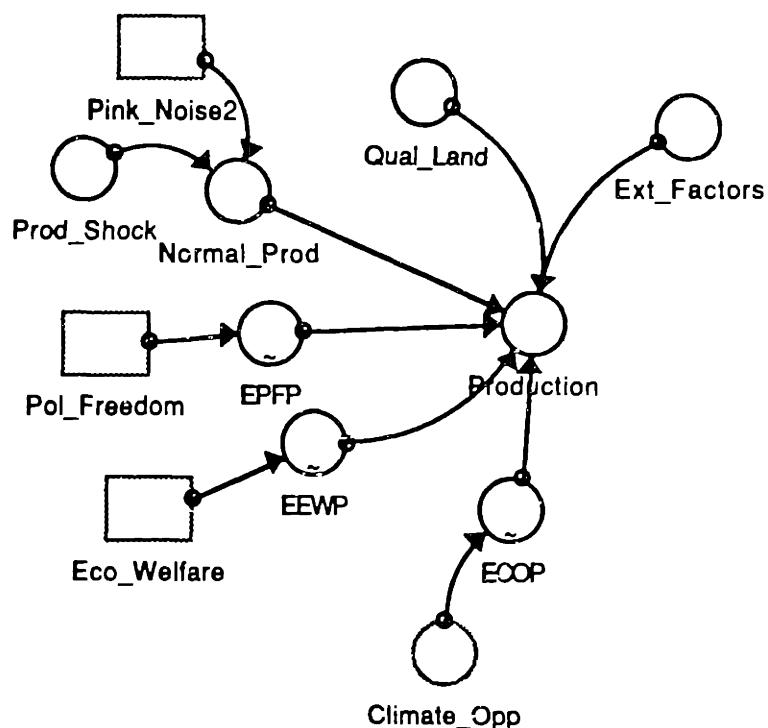


Figure B.4.1: Production

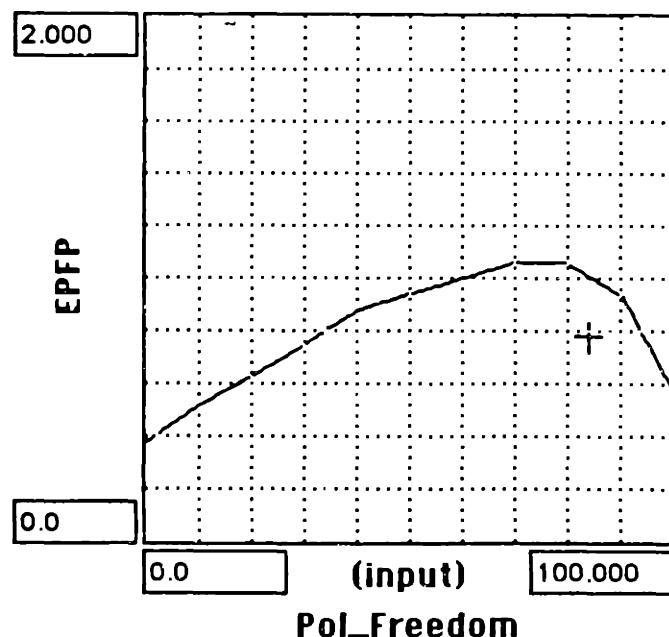
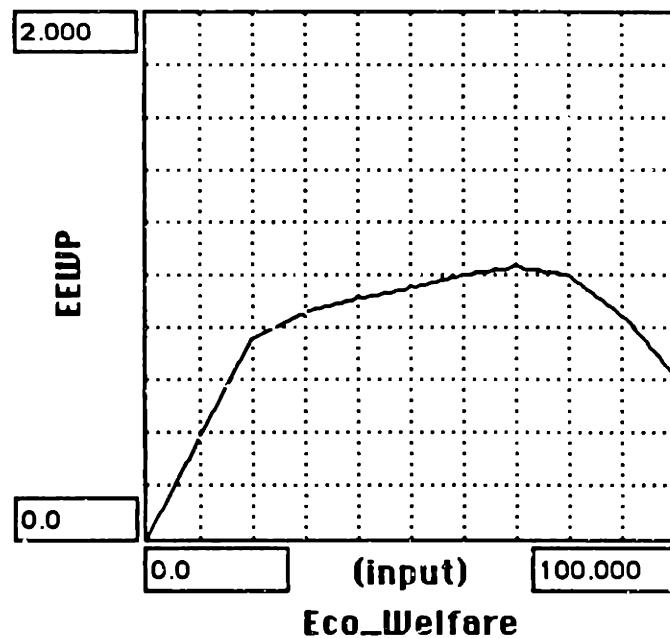
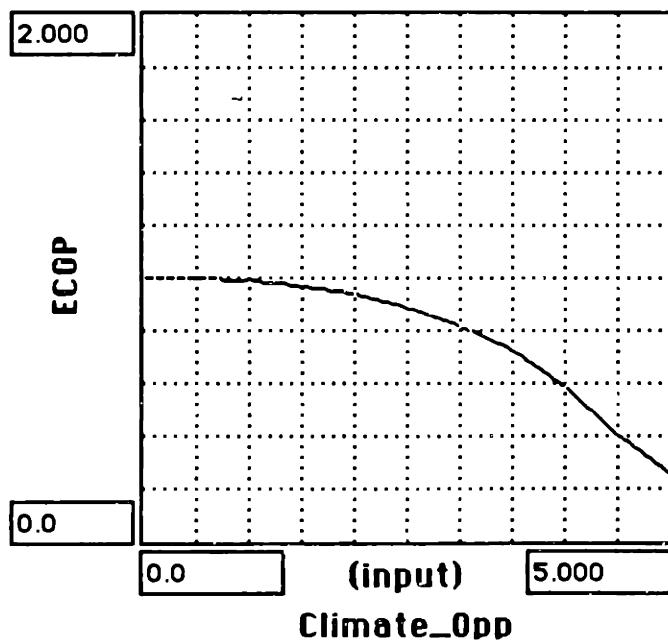


Figure B.4.2: Effect of Political Freedom on Production (EPFP)



**Figure B.4.3: Effect of Economic Welfare on Production**



**Figure B.4.4: Effect of Climate of Opposition on Production (ECOP)**

#### *Economic Distribution (OF\_Exec, OF\_Pop, OF\_Aris)*

All output is distributed to either the populace, the aristocrats, or the executive. This distribution is regulated by the respective output fractions (OF\_xxxx) of the various factions. The output allocated to the executive (OF\_Exec) is proportional to executive power (Exec\_Power) and represents those resources necessary for the executive to remain in power--troops, arms, tax

collectors, etc. After the executive has received his share of the society's output, the remainder is divided between the populace and the aristocracy. This is accomplished by comparing the economic initiative of the government (*Eco\_Initiative*) with current economic welfare (*Eco\_Welfare*) in order to arrive at an economic policy (*Eco\_Policy*). If *Eco\_Initiative* is greater than *Eco\_Welfare*, then a greater share of the output is allocated to the populace. This is accomplished with the aid of the table function *EEPOF* (Effect of Economic Policy on Output Fractions) (Figure B.4.6). The sum of these three output fractions is one.

#### *Economic Welfare (Eco\_Welfare)*

Economic welfare is measured in units of welfare and is defined as the current popular state of material well-being. It is strongly determined by the amount of output allocated to the populace, however, it is probable that the typical peasant has sufficient stores to survive for a few months if his food is cut off. Further, there are likely a number of delays inherent in the redistribution of output (Seasonal crop cycles, etc.). Thus, *Eco\_Welfare* is formulated as a smooth of output to populace (*Output\_Pop*).

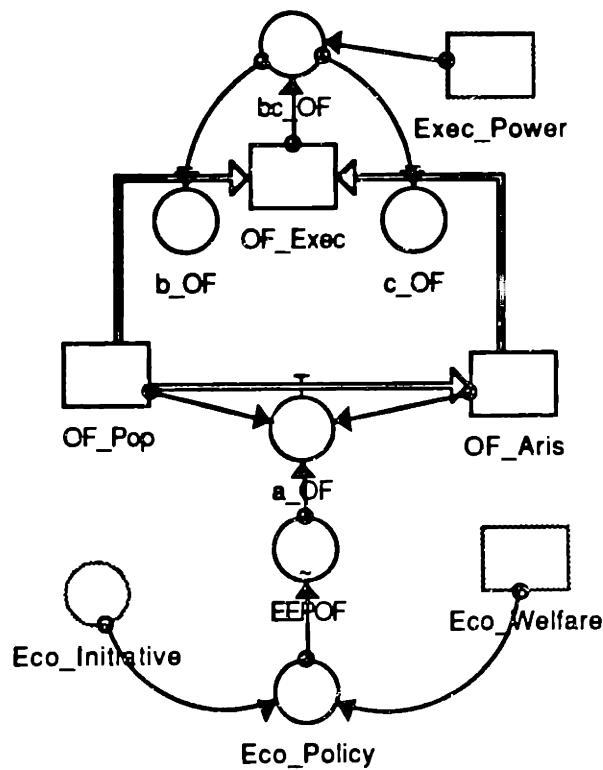


Figure B.4.5: Economic Distribution