Preview of Period 12: Balance of the Planet

12.1 Computer Simulations

How are computer simulations used?

What are the limitations of simulations?

12.2 Balance of the Planet

Which policies improve the quality of life for the most people?

How are environmental and societal problems interrelated?
Computer Simulations

Computer programs are useful for:

1) Simulating dangerous, expensive or impossible experiments without actually doing them. (Examples: flight training, building designs, or experiments involving stars).

2) Quickly calculating the results of changing the value of variables. (Examples: weather forecasts, stock market projections or “Balance of the Planet”)

Limitations of Computer Simulations

1) Computer simulations can only reflect reality to the extent that it is understood.

2) The simulation may reflect the bias or opinions of those who wrote the computer program.

3) Simulations may oversimplify reality.

4) Simulations cannot predict the future.
What is Balance of the Planet?

♦ Balance of the Planet is a simulation developed in the mid 1980’s when environmental concerns were becoming of far-reaching importance.

♦ The program shows the effects of environmental policies to the year 2035.

♦ It allows you to become acquainted with world energy questions and environmental consequences.

♦ The program has related some basic facts about the environment. Through many simplifications, it reduces the world’s energy parameters and consequences to 150 variables.

♦ The 150 equations relating the variables are solved self-consistently each time the program advances the world 5 years.

♦ The program ends in the year 2035.
Playing Balance of the Planet

You will have an opportunity to implement policies to try to improve the condition of the Earth's environment and inhabitants.

♦ You can discourage practices you think are harmful to the planet (burning fossil fuels, using pesticides, etc) by taxing them.

♦ You can encourage practices you think are beneficial (solar energy, recycling centers, etc) using the revenue from your taxes to subsidize beneficial practices.

♦ After making changes to tax rates and subsidies, you execute your changes and the game advances five years into the future, showing you the effect of your policies.

♦ The simulation also provides factual information on environmental issues and the interactive nature of our environmental challenges – how one environmental issue may impact a related issue.
Quick Instructions for Balance of the Planet

(See the instruction sheet on your table for more detailed instructions.)

1) Press R to go to the Results screen. Use the arrow keys to highlight an aspect of life you wish to improve and press “return” for info.

2) Press P to go to the Policy screen. Change the tax or subsidy by highlighting an item and moving the slider bar.

3) When you have made all your changes, press E to execute your policies. The simulation advances 5 years into the future and shows you the results of your policies.

4) Select feedback on the results screen to see the effect of your changes.

5) After every 5 year period, the changes you made to taxes (left side of the policy screen) are reset to the initial percentages. But the changes you made to funding (right side of screen) carry forward until you change them.

6) It’s not an easy game to win. (The Earth has serious problems.) Even a good plan may not show positive results for the first 15 years or more!
Period 12 Summary

12.1 Computer simulations can be used to simulate an event that is dangerous, expensive, or complicated involving many variables.

Balance of the Planet simulates the effects of various policies on the economic, social, and environmental welfare of the Earth.

Practices can be discouraged by taxing them and encouraged by subsidizing them.