**BUSINESS GAME EQUILIBRIUM FOR EDUCATION IN ECONOMICS, COMMERCE, AND LAW.**

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The business game EQUILIBRIUM is a novel game-based training in economics, commerce, and law via imitating the living waves in natural ecological systems. Its basic idea is in considering the basic features of the “harpy-victim-food” regulatory cycles simplified within birth, self-reproduction, and death steps approximation. The computer modeling is used to demonstrate a number of typical situations often occurring in economic, commercial, and law systems by this clear and well-known model. This training is implemented in a game form through observing the time-scaled dynamics of the harpy, victim, and food populations in their co-evolution and by virtual farming each of them to maximize the target. The random catastrophe pressure is also simulated. The business game EQUILIBRIUM is designed to give an acquaintance with the dynamics of complex systems and, especially, the regulation via shifting their quasi-equilibrium states. At the very beginning of the professional education in economics, commerce, and law, the game will allow the participants to gain the skills in understanding how any complex systems can be managed, regulated, and their features predicted. These skills can be useful in their future professional activity. The game EQUILIBRIUM is available,<http://wwwmgs.bionet.nsc.ru/Educate/Equilib/>.

The ecological system simulated consists of three elements: (i) panthers, the harpies; the dependence of the number of individuals on time*t*is*X(t);*(ii) jerboas, the victims, which are also food resource for the harpy, with number-time dependence*Y(t);*and (iii) grass, the food resource for the victim,*Z(t).*The complex system of interrelationships between these elements in the ecological system is simulated by the equations that have the following general form:

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| **dX/dt= aXX + bXXY - dXX2 - rXRand(t)\*X;** | (#) |
| **dY/dt= aYY + bYYZ - cYYX - dXY2 - rYRand(t)\*Y;** | (##) |
| **dZ/dt= aZZ - cZYZ - dZZ2 - rZRand(t)\*Z + sZ;** | (###) |

where**a**are the coefficients of self-reproduction (exceeding of birth rate over death rate);**b**, the coefficients of the birth rate increment depending on food resources;**c***,*the coefficients of elimination;**d***,*the coefficients of competition between individuals for limited food resource;**r***,*the coefficients of the effect of accidental catastrophes described by random variables**Rand(t***),*with the values from 0 to 1; and**s***,*the inflow of the food resource (only in modeling the jerboa-breeding farm).

Participant of the business game EQUILIBRIUM fixes the recommended values of the coefficients*{b, c, r, s},*and finds himself in the following ecological situations: (1) a national park lacking any harpies; (2) a jerboa-breeding farm; (3) a desert with low number of harpies and limited food resources;  
(4) Siberian taiga (boreal forest) with a plenty of food and numerous harpies; etc. The task is to find the values of the coefficients*a*and*b*maximizing the average population of jerboas under given ecological conditions (optimizing survival basing on the balance of individual and group strategies). Based on the theoretically known optimal game strategy, the computer is automatically marking the participant’s results.

Thus, the participant of the business game EQUILIBRIUM gains the practical skills in optimizing the complex systems in their self-reproducing efficiency at the relevant “living wave” mode, which is a very important experience for the future practice in economics, commerce, and law.

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