Geophysical Research Abstracts
Vol. 14, EGU2012-11245, 2012
EGU General Assembly 2012

Modelling the costs of natural hazards in games

M. Bostenaru-Dan (1,2)
(1) "Ion Mincu" University of Architecture and Urbanism, Bucharest, Romania, (2) University of Bucharest

We will present the application of (socio-)economic models coming from games theory to urban planning and to large scale architectural tasks, the most frequent one presented being that of the church. The importance of games will be seen as a continuation of the role played by toys for the development of skills of the architects. While toys dealt with the development of 3D viewing and more realistic “building” focusing, for example, on details, games use stylized construction management models with “symbols” for resources, being it in a board game or in a computer supported social environment.
22 October 1997 to 31 May 1998 the Canadian Centre of Architecture hosted the exhibition “Toy Town”. Apart of architecture toys, a field where principles of city building apply are architecture games. City building games are a subgenre of construction and management games, the best know of each is SimCity. In its initial version of 1989 SimCity included disaster scenarios including the 1906 San Francisco earthquake, but also flooding, fire etc. During the further development only the fire remained as well implemented as the initial scenarios. It was a way to look at the role of disasters in urban planning, not only as way for a new begin, but also as mitigation and earthquake management. It is to be noted that disasters represented in SimCity 2000 are converted to such which develop in surface, such as fire and flood. Earthquake damage which occures at random buildings is not modelled. Also, the fight against the consequences of the disaster, fire and flood are done in a realtime first hand action game, not as construction management game. However, there are costs associated to mitigating the disaster, such as the costs for fire fighters. Today such city building games evolved to 3D applications, the semantic enrichment of which involves the economic model. The digital 3D model will be compared with the “hard copy” 3D model which architecture toys represent. Models for SimCity are looked for today, including a development at the University of Torino called SimTorino, which simulates the development of the city in the next 20 years. The connection to another games genre as video games, the board games, will be investigated, since there are games on construction and reconstruction of a cathedral and its tower and a bridge in an urban environment of the middle ages based on the two novels of Ken Follett, “Pillars of the Earth” and “World Without End” and also more recent games, such as “Urban Sprawl” or the Romanian game “Habitat”, dealing with the man-made hazard of demolition. A review of these games will be provided based on first hand playing experience. In games like "World without End" or "Pillars of the Earth", just like in the recently popular games of Zynga on social networks, construction management is done through providing "building" an item out of stylised materials, such as "stone", "sand" or more specific ones as "nail". Such approach could be used also for retrofitting buildings for earthquakes, in the series of "upgrade", not just for extension as it is currently in games, and this is what our research is about. "World without End" includes a natural disaster not so analysed today but which was judged by the author as the worst of manhood: the Black Death. The Black Death has effects and costs as well, not only modelled through action cards, but also on the built environment, by buildings remaining empty. On the other hand, games such as "Habitat" rely on role playing, which has been recently recognised as a way to bring games theory to decision making through the so-called contribution of drama, a way to solve conflicts through balancing instead of weighting, and thus related to Analytic Hierarchy Process. The presentation aims to also give hints on how to design a game for the problem of earthquake retrofit, translating the aims of the actors in such a process into role playing.
Games are also employed in teaching of urban planning, as in the regional planning curricula at the Karlsruhe Institute of Technology, including a role playing game based on the Green Revolution Game, which builds the basis for getting data for further project study. This one included natural hazards such as drought, and their costs. They also play a role in building public space, as in case of “Habitat”, which was designed to activate the civil society in café. City investigation games may not take only the shape of computer or board games, they may be played in a wider city environment. From activation of public spaces in frame of cultural capitals in Austria, there are models of urban “races” to find landmarks, such as Klosterrallye in Karlsruhe, Germany, also included as a step at another geographic scale in the “Green CCA” game developed at the Canadian Centre for Architecture.
Simpler games include the use of software such as Flash/Director to identify quiz like aspects related to architecture features, as employed by the Reseau Art Nouveau but also to disasters such as the San Francisco earthquake. We will present how to program such a game.