A historical landscape at the crossroads of cultures: A digital landscape at the crossroad of computer-aided reconstructions and GIS approaches

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Abstract

Technical development in the field of computer-aided reconstructions has significantly contributed to the creation of new research approaches in the field of environmental historical studies. 3D reconstructions and virtual reality programs have become very popular for archaeological sites and for partially destroyed historical monuments. The attractive visual effects of these programs have increased their popularity and the application of similar programs contributed to the development of landscape studies. Early attempts in this field emphasized the advantages of such applications in the context of flexibility compared to the inflexibility of reconstructions built in stone or brick. However, for the creators of such programs visual effects and technical developments became more attractive than theoretical issues. If archaeology wants to use the flexible character of these reconstructions, the most important theoretical issue, the question of authenticity, should be addressed.

Our poster presentation of 3D reconstructions and virtual reality programs will therefore focus on the problem of the visualization and the demonstration of different reconstruction attempts and their relationship to relevant datasets. The idea is based on the pilot project of a long-term environmental historical research scheme focusing on the Danube Bend, a site on the tentative list of the UNESCO World Heritage sites. It is also an area with important archaeological information on the cross-cultural nature of a landscape characterized by an intricate system of natural and cultural heritage features. The long-term environmental historical changes of major European rivers are in the frontline of interdisciplinary research using archaeological, ecological, historical and pictorial sources and data, which makes the Danube Bend an especially important case study. Virtual landscape reconstructions and dynamic environmental models play a crucial role in the analysis and visual processing of the data. Such reconstructions are based on larger datasets derived from intensive field-survey projects connected to the construction of a major hydro-electric power station, archaeological excavations and stratigraphic sequences as well as from the analysis of written evidence (charters, chronicles, travellers' accounts, etc.). A large number of etchings and other visual images from the Early Modern Period and cartographic sources from the late 18th century are also used for the reconstruction of the transformation processes of this landscape, as well as

for the creation of images of everyday life included in the reconstructions. The results are summarized in a sequence of maps, each representing an important historical period as well as in 3D reconstructions of the area, including dynamic elements. The dynamic character of the program is designed to show the different levels of datasets used by the reconstruction process and to highlight the different levels of accuracy. The pilot project also aims at the creation of visual tools (such as screenshots) to "move" between different layers of academic datasets and reconstruction strategies. To address the question of authenticity at yet another level, the software will allow the user to take a look at the information technological aspects of the creation of the multimedia reconstructions. The program can be seen as an important tool in educational programs for very different groups of society, and at the same time as a powerful, dynamic research tool for many aspects and methods of academic research.