Cultural Ecosystem Services in a Retro(per)spective

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I. INTRODUCTION

The Ecosystem Services (ES) debate plays a crucial role in conservation science and practice. The concept of ES aims the valuation of multiple services of ecosystems and landscapes, the identification of trade-offs among different land-use scenarios, and encourages decision making in land use planning (Schaich et al. 2010). The Millennium Ecosystem Assessment defines Cultural Ecosystem Services (CES) as ‘non material benefits which people obtain from ecosystem through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences (MEA, 2003). To communicate and discuss the relevance of CES, it is essential to find interpretation methods to visualize them. This requires also the understanding of the historical evolution of landscapes as well. Within this issue we consider CES in a retrospective way and visualize landscape changes in the urban forest of Göttingen, called Hainberg in 3 time periods: before (1789), during (1910) and after (2013) afforestation process.

II. AIMS

To show the relevance of landscape visualization as a tool to understand Cultural Ecosystem Services,

To visualize landscape changes within the last 200 years in the Urban Forest of Göttingen

III. METHODOLOGY

We have used the interdisciplinary approach to analyze and visualize Cultural Ecosystem Services. This approach requires historical knowledge, geographical planning knowledge, and advanced software skills. Thus, we have used historical maps, old photographs, copper engravings, paintings, as well as contemporary and secondary literature. The historical and actual maps referring to the three time intervals (1878, 1910, 2013) have been digitalized in ArcGIS and visualized with the interactive real-time visualization software Biosphere3D. Our methodology is based on the following steps:

1. DEFINE CES & INDICATORS
2. SELECT CONVERTIBLE CES
3. DEFINE CASE STUDIES
4. EVALUATE CES / TIME INTERVALS
5. VISUALIZATION IN GIS
6. VISUALIZATION IN B3D

IV. RESULTS

Figure 4-5. Case study of Bismarckturm visualized with Biosphere3D during the forestations (1900) and today (2013) (L. Szűcs & J. Mälder)