GIScience and Historical Visual Sources: A Promising Look at Past Scenarios and Sceneries

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The discipline of historical geography evolved rapidly in the 20th century [1,2] and has been applied in many studies worldwide. The main difference between historical geography and historical studies is that the former investigates past scenarios from a geographical point of view [3]. For this task, it utilizes spatial approaches to interrogate textual and written sources as well as various cartographic material. The prominent themes of historical geography include landscape and cityscape reconstructions, rural and urban development, past regional demographic examinations, and historical trends associated with geographic locations. Over the years, the discipline has seen great popularity, but lately, it seems that its growth has somewhat slowed down in parallel to the developing discipline of environmental history [4,5]. Generally speaking, one can claim that historical geography is seeking new conceptualizations and theories in order to rise again [6,7].

The introduction of GIS (geographic information systems) and GIScience (geographical information science) have revolutionized the way scientists analyze spatial data. To date, GIS serves as a framework for a wide range of spatial applications [8]. Using GIS, one can perform cartographic analyses [9–11]; create deep maps [12]; leverage geographic information using geodesign approaches [13]; inspect narratives using map stories [14]; and conduct place-based studies using platial GIS [15]. GIS is also used to create new forms of virtual knowledge [16]; perform 2D or 3D landscapes reconstructions [17–22]; and resolve complex scenarios of past phenomena [23–25]. The GIScience sub-discipline defining historical analyses using GIS is referred to as HGIS (historical GIS) [26]. Similar to other GIScience sub-disciplines, HGIS is evolving and being integrated significantly with historical geography [27,28].

The study of historical scenarios benefits from written accounts but also from visual sources such as drawings, maps, early photographs, and air-photos. Until GIScience was introduced, much of the interrogation of these sources was qualitative in nature. Moreover, occasionally, it overlooked vast amounts of information and geographic features one might extract from these sources. GIScience can bridge this gap and offers a wide range of approaches to interpret and analyze historical visual sources that are of relevance to historical geography as well as other social sciences and humanities. In my opinion, the potential of using GIScience in historical geography studies is enormous and can be the “game changer” that historical geography is desperately looking for [29].

The aim of this Special Issue entitled “Geographic Information Science (GIScience) and Geospatial Approaches for the Analysis of Historical Visual Sources and Cartographic Material” is to address the exploitation of historical visual sources for resolving past scenarios and sceneries. With the theoretical and methodological contributions made in this Special Issue, it is possible to shed some light on the potential benefits of using GIScience in conjunction with such visual sources, leading to promising perspectives of the past.

The Special Issue includes eight published papers. The publications are equally divided into methodological and theoretical contributions. The first group of publications...
contains tools, techniques, and approaches for a quantitative interpretation of various visual sources as well as deriving spatial insights of their creators. This corpus includes a visual graph-based framework for matching geographical areas through time [30]; assessing the impact of the cartographer’s position and topographic accessibility on the accuracy of the extracted historical land use information [31]; measurement analysis of urban spatial layouts using the square grid method [32]; and coupling historical maps and LiDAR data to identify man-made landforms [33]. The second group includes analyses and examinations of past scenarios: GIScience and historical cartography for evaluating land use changes and resulting effects on carbon balance [34]; geospatial analysis of the non-surveyed (estimated) coastlines in Inoh’s Map, 1821 [35]; agricultural land-use changes in the Judean region from the end of the Ottoman Empire to the end of the British Mandate [36]; and the historical Vltava River Valley—various historical sources within web mapping environment [37].

These studies emphasize the enormous amount of information one can extract from old visual sources using GIScience. Seemingly, such studies are being conducted for ages, but the road is still long, and there is much more to be discovered as the interrogation of the available visual sources is far from being complete. In a broader context, GIScience has a crucial part in fostering the historical geography discipline as well as developing other digital humanities domains by facilitating research, education, public outreach, and data dissemination. I hope that this SI and the included papers have contributed a little to achieve that goal.

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