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Graphic design and button placement for mobile map applications

P. 196-208

Tymoteusz Horbiński, Paweł Cybulski & Beata Medyńska-Gulij

Abstract

The following paper is an analysis of user preferences for the placement of buttons on a mobile map application. The authors focused on six public web mapping services, analysing them in terms of the graphical diversity of their buttons. What made the study innovative was the comparison of subjective user preferences regarding buttons placement with the layout of public web mapping services. The obtained results led to a conclusion that user preferences differ from the solutions applied on web mapping services. Adjusting the placement of buttons to fit those preferences would be a way of addressing the practical needs of people who use mobile maps application.

Ambiguous Use of Geographical Information Systems for the Rectification of Large-Scale Geometric Maps

P. 209-220

Anders Wästfelt

Abstract

Unlike modern maps, geometric maps lack a coordinate system and contain unsystematic geometric inaccuracies. This paper illuminates four aspects concerning the problem of uniting geographical information technology with old geometric maps. These are as follows: first, the origin of and geometric qualities in the representation of objects in geometric maps; second, the distortions originating from measurement techniques; third, the assumption that it is possible to find points that are the same over time for rectification in Geographic Information System (GIS); and, fourth, the extrapolation of unsystematic geometric distortions when using GIS techniques without any knowledge of the present unsystematic distortions in a map. The article presents the background of Swedish geometric maps and a hypothetical example is used to present the principle problems of using GIS techniques to rectify geometric maps. The conclusion of the paper is that systematic and unsystematic geometric distortions need to be identified and handled separately.

The Influence of Web Maps and Education on Adolescents' Global-scale Cognitive Map

P. 221-234

Lieselot Lapon, Philippe De Maeyer, Bart De Wit, Lien Dupont, Nina Vanhaeren & Kristien Ooms

Abstract

Several factors influence the global-scale cognitive map. The use of school books, atlases and web maps all play an essential role in the development of geographical knowledge of adolescents. This research examines the impact of the educational system versus web maps on the adolescents' mental map. Through a specially designed web application, university students and secondary school pupils estimated the real proportion of countries and continents compared to Europe. Participants with a more theoretical background or wider knowledge about map projections and its distortions estimated the real proportions more accurately. This research also found that the Robinson projection, commonly used in schoolbooks and atlases, is the best-known map projection among adolescents. However, the influence of web maps

could not be proven since no Mercator effect was found. Education is of undeniable importance, and therefore, educational materials that encourage people to look more carefully and critically at maps should be further developed.

Breaking the Eyes: How Do Users Get Started with a Coordinated and Multiple View Geovisualization Tool?

P. 235-248

Izabela Golebiowska, Tomasz Opach & Jan Ketil Rød

Abstract

Maps are frequently combined with data displays in the form of coordinated and multiple views (CMV). Although CMV are valuable geovisualization tools, novice users may find them complex and thus require explanation. However, no tutorial guidelines have been developed that indicate what is helpful in understanding CMV geovisualization tools. We therefore conducted a study on the learnability of a CMV tool, informed with eye-tracking data, talk-aloud and interaction logs. We have investigated how untrained users work with a CMV geovisualization tool. The study revealed that: (1) despite their initial confusion, users found the tested tool pleasant to play with while getting to grips with how dynamic brushing works, (2) when examining the tool's interface, participants mainly looked freely at explanatory elements, such as labels and the legend, but they explored interactive techniques only to a limited degree. We conclude with tips about tutorial design and layout design for CMV tools.

Quadrature Rules to Calculate Distortions of Map Projections

P. 249-260

Krisztián Kerkovits

Abstract

In map projection theory, it is usual to utilize numerical quadrature rules to estimate the overall map distortion. However, it is not known which method is the most efficient to approximate this integral. In this paper, overall map distortion is calculated analytically by a computer algebra system. Various integration methods are compared to the exact results. Some calculations are also performed on irregular spherical polygons. Considering the experiments, the author suggests utilizing the first-order Gaussian quadrature as it always gave reasonable results, although it is not the best for all cases.

Emplaced Distances

P. 261-272

Giovanni Spissu

Abstract

In the Sardinian artist's Maria Lai's works, *Geografie* and *Geografie Spaziali*, she depicted the cosmic pathways of the Sardus Pater, using a cartographic representation of one of the island's most popular legends. One of these works' key features is the use of embroidery techniques learned from women of her village. She considers the Sardinian territory not only an object of representation but as an expressive medium of her work and a fertile space that generates new worlds. I argue that we can draw on Maria Lai's work to conceive a particular form of deep mapping through which to explore the territory through its imaginative dimension. For the purpose of this article, I intend to describe how, inspired by Lai's works, I built *Emplaced Distance*, a map of Cape Town through the Sardinian territory.

Herbert Bayer's *World Geo-Graphic Atlas of 1953: A Modern Atlas, Then and Now*

P. 273-283

Francis Harvey

Abstract

Herbert Bayer (1900–1985) created the *World Geo-Graphic Atlas* (published in 1953) – an influential atlas that followed modernist design principles associated with the Bauhaus. This paper focuses on the modernist exhibition design concepts he refined in his work on this seminal atlas of the twentieth century. The *Atlas* stands out in its successful expansion of the predominant map-centric atlas framework that is augmented by modernist approaches to visualization. The central concept used in the *Atlas*, the extended field of vision from exhibit design and architecture, was central to its organization and

presentation. The *Atlas* integrates topographic maps, concise textual narration, tables, pictograms, thematic maps, geovisualization, artwork that uses modernist graphic techniques, and approaches to support flexible reader engagement. This exemplary atlas – both then and now – communicates a broad diversity of geographic knowledge of regions and countries from around the world through graphical means.
