
Infographics in Atlases: Concept of definition and classification

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Infographics as a popular and up-to-date method of visualization of both spatial and attribute data became obvious in majority of atlases. While infographics show complex stories, uncover data and provide more readable and effective way of understanding information than basic statistical data visualization. Although the outlines and principles of infographics are not precisely defined, they are widely used and developed. In addition, infographics are using different types of graphic visual representation of information, data or knowledge through the attribute data visualization (graphs, diagrams, and tables), spatial data visualization (maps, geo-oriented diagrams), text and pictures.

The objectives of this contribution is to present a concept of defining those terms in the area of cartographic research, taxonomy and classification, based on examining example layouts in atlases from different parts of the world. As a result of the research is to unite recent approaches and provide clear description of infographics in atlases.

In the case study, wide range of infographics were being evaluated in the term of their location on a range between maps on one side and non-spatial data visualization on the other side. On each of the selected infographics, area coverage, graphical dominance, information value, and visual hierarchy of map and non-spatial data part was evaluated to identify different infographics styles and their specifics. For all examined properties, several intervals or range was set to be able to combine different types into characteristic combinations.

Erwin Raisz Atlases – an early multi-method approach to cartographic communication

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Hungarian-born American cartographer Erwin Raisz is best known for his physiographic maps which describe landforms using a variation on an isometric projection, to show scenery on maps (Raisz 1931). These hand drawn "landform" maps are still sold today. In his seminal textbook *General Cartography* Raisz wrote "The good cartographer is both a scientist and an artist" and this thoroughly characterizes his approach to communicate spatial data through adapted visualizations.

More silently, Raisz developed three atlas that followed his approach employing hand drawn maps accompanied by carefully arranged text, pictures and statistical graphics, thus pre-empting infographics that are common today.

The *Atlas of Global Geography* (1944), *Atlas de Cuba* (1949) and the *Atlas of Florida* (1964), even though published in different production contexts, show a development of Raisz idea to use rather simple maps but add additional information features to simplify rather complex topics and thematic interrelations. The scope of the visualization methods used exceeds those of recent atlases and corroborates the importance of aesthetic variety in successful user-oriented cartographic communication.

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Exploring Personalization of Infographics and Stories in the Atlas of the Ageing Society

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The atlas of the ageing society employs the story network principle to organize and network its content. Each information unit is presented as a card that is linked to topically related cards. Additionally, so-called storylines link selected sets of cards. Often the cards contain visualizations of quantitative information employing a symbol set inspired by Neurath's Isotypes, creating static infographics. The current atlas developments focus on more interaction and personalization of the infographics as well as the stories. For doing so, we believe that a parametrization of infographics and stories is required. This adds a level of abstraction that allows personalizing the parameters and then automatically creating different infographics for different audiences. We would like to present and discuss these ideas at the "Atlas and Infographics" Workshop – the opportunities but also potential challenges, such as avoiding the 'filter bubble'.

Juxtaposing Government and Social Media Data in Delivering Responsive Geospatial Information via an Online Atlas Services: A Case of Criminal Graphics in Jakarta City

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Traditional atlases either in paper format or electronic format rely on government and authoritative data to communicate multi-theme data to a broader audience in forms of maps and graphics. With the new trend in using social media and web data as a quick reference, users tend to refer to social media data which commonly are in pictures, videos and text formats when following new developments of issues in social areas, including on criminalities. The traditional atlas that has functioned as a gateway and as a storyteller to various geospatial and statistical data is now challenged to provide a new means as a geospatial information reference combining government and social media data in responding to fast information developments. This work proposes a framework on the development of an atlas online that provide a systematic means to aggregate and display results of geo-visual analytics on top of an atlas storytelling engine. Infographics and visual summaries are integrated on the atlas as a quick win solution to develop a set of responsive visualization system seen as a visual broadcaster to atlas users. The other way around, the atlas service is designed to be able to push' atlas maps into social media, creating a twitter atlas of Indonesia. As a proof of concept, the online atlas service combines criminal data from Police and Statistics Office with results of geo-visual analytics of criminal data in 2017 of Jakarta City to create diagrams and maps presenting trend and pattern of criminalities. Visual clarification and detail analysis can be juxtaposed in forms of maps and graphics using government and social media data as well as field verification.

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GeoInfographics: an Integrative Information Design Model to Promote Thematic Atlas Innovation

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During the current research tendency of “human-oriented” map compilation, traditional information architecture and design paradigm for thematic atlas need to face new challenges. First, how to respond to the integrative expression demands of large-capacity information in a limited media environment? Secondly, how to adapt to the personalized requirements among diverse user groups in multiple application scenarios? And, how to promote the evolution from data-driven “visualization” to knowledge-service-oriented “intelligibility”? So, we attempt to explore an integrative information design model through the practical cases such as “Climatological Atlas of Tropical Cyclones over the Western North Pacific (1981-2010)”, involving various methods upon content organization, narrative logic, visual forms and design styles. On this basis, we expected to build a new conceptual framework of “GeoInfographics”, while initially discuss the inter-involvement relationship and alternative coupling schemes between information graphics and thematic maps. The purpose is to motivate the liberation from Cartography, Mapping to GeoInfographics, and to expand the creative and innovative design of thematic atlases, which will facilitate their roles converting from data integration to information communication and even knowledge cognition.

Infographics in Digital Thematic Atlases – Possible Applications

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In digital atlases, the access to thematic information is generally given by firstly selecting a topic from a hierarchical menu, subsequently followed by the display of the chosen map. A temporal access, or even an access via text is rarely offered, or only as a second option possible. This shows a structural weakness of many digital atlases, which are not capable to use the full power of the inherently available interconnections of its geographic information and statistical data. On the one hand, this weakness results in the fact, that only a global view of the map’s content/substance can be conveyed, while interesting individual aspects or facts are not discovered. On the other hand, the group of atlas users may be restricted to people solely with great interest in maps.

As the new trend in data journalism shows, infographics as a means for communication and design – partly together with storytelling techniques – offers new interactive opportunities. Using infographics in atlases can act as a door opener to attract people and acquire additional user groups. For map exploration, infographics possesses an indication function: they can show additional temporal, spatial or thematic dimensions of the data. Taking the example of the “Atlas of Switzerland – online”, the contribution will present ideas and possible applications, thus serving as a basis for further discussion.

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Modern storytelling through infographics in early statistical atlases

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With the rise of public statistics as a new democratic, unbiased source of information for a civil society during the second half of the 19th century, also various indispensable «auxiliary» sciences, e.g. in the field of graphical visualization or Thematic Cartography, emerged in symbiosis. The new methods they provided, helped to better explain and spread the growing statistical results to a larger audience. Apart from merely adding very simple bar or line charts to maps, as it was the case in first statistical atlases during the 19th century, more and more attractive infographics appeared in statistical atlases around the turn of the 19th/20th century – some of them true masterpieces of art and design that are still fascinating in today's data-driven world. These infographics co-existed with maps and added value to the atlases and their spatial components through detailed topical and temporal stories. The presentation will shortly outline the development of these atlases and showcase some of the best infographics.