

## Visual Exploration of Photo-Atlases in SuAVE

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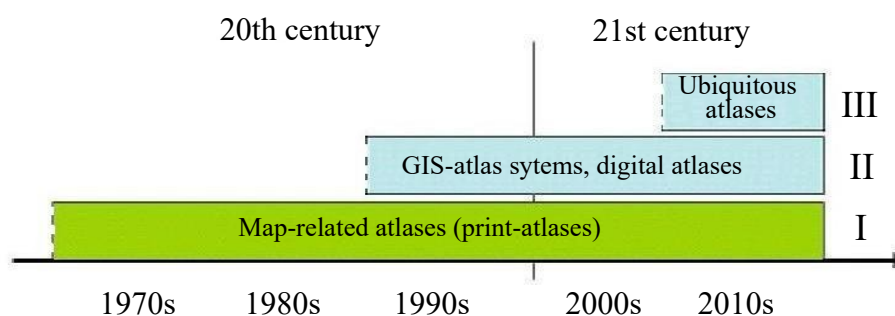
The need for mobile, ubiquitous thematic and image-related information in a modern communication society is given and continues to increase. The "Iconic Turn" determines our everyday life and becomes a key channel of our information consumption in private and professional matters. This trend also includes thematic photo-atlases, which integrate cartographic and non-cartographic traditions and become a ubiquitous form of modern information representation and exchange. A new application for semiotic analysis, annotation, and sharing of thematic photo-atlases and their collections is based on SuAVE (Survey Analysis via Visual Exploration), a platform that has been used for analysis of surveys and image collection across several disciplines.

**Keywords:** SuAVE, photoatlas, atlasing, semiotics

### 1. Photo-atlases as semiotic models

#### 1.1 Ubiquitous photo-atlases and the three generations of atlases

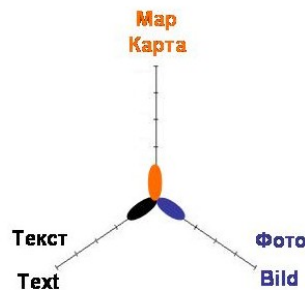
We discuss ubiquitous photo-atlases (or mini photo-atlases) as semiotic models. Such mini-atlases are often built for smart phones and tablets, including 30–40 slides and consuming 10–30 MB of storage, which presents an adequate balance of detailed information content and download speed for ubiquitous on-the-go consumption. These information collections belong to the third generation of atlases with cartographic and non cartographic traditions (Fig.1).



**Fig. 1.** Three generations of atlases (after Wolodtschenko, 2017)

## 1.2 Semiotic “coordinate system” and atlas classification

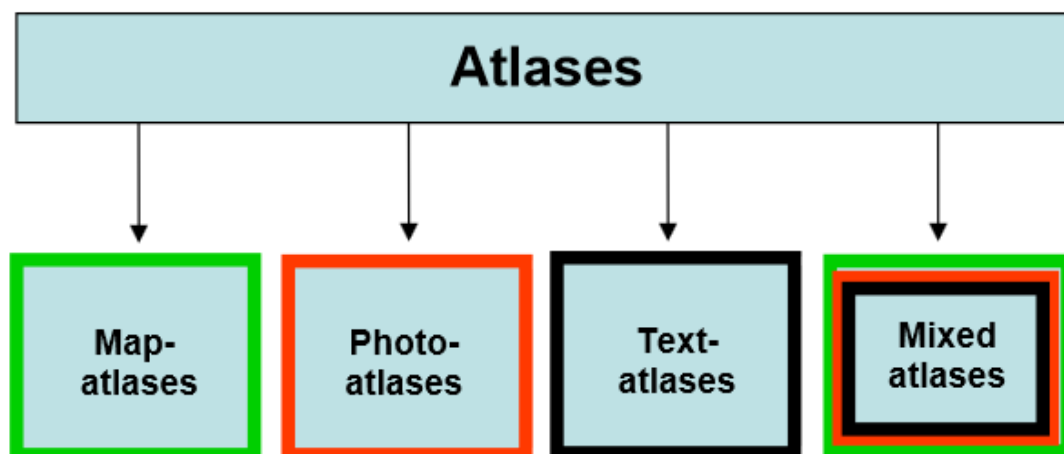
An atlas can be represented as a semiotic model built upon a three-axis coordinate system (Fig. 2) of meta-variables: text–image–map (Wolodtschenko, 2007). Analysis of such atlases is the key objective of atlas semiotics.



**Fig. 2.** Semiotic three-axis coordinate system: text, image and map (Wolodtschenko, 2007)

We use the aforementioned three-dimensional model to classify atlases based on their semiotic characteristics into four groups (Fig. 3) based on the definitions of the three semiotic meta-variables (within the three-axis coordinate system): text, image, and map:

- Map-based atlases (maps dominate over 50%)
- Picture-based atlases (images dominate over 50%)
- Text-based atlases (texts dominate over 50%)
- Mixed atlases (text, images, and maps are combined)



**Fig. 3.** Semiotic classification of all atlases (after Wolodtschenko, 2012)

So far, map-based atlases have been used most widely in the modern information society. However, we witness increasing popularity of other types of image-related products such as photo-atlases, picture books, picture albums, and picture galleries, as a new channel of digital storytelling.

### 1.3 Atlassing

Atlassing as a new semiotic and technological research concept (with atlassemiotics and atlasgraphy or atlasgraphics) can play an important and integrative role in the planning, creation and use of atlases (Fig. 4). Atlassing integrates all three generation classes of atlases (print atlases, digital atlas information systems and digital user-oriented, ubiquitous atlas products).

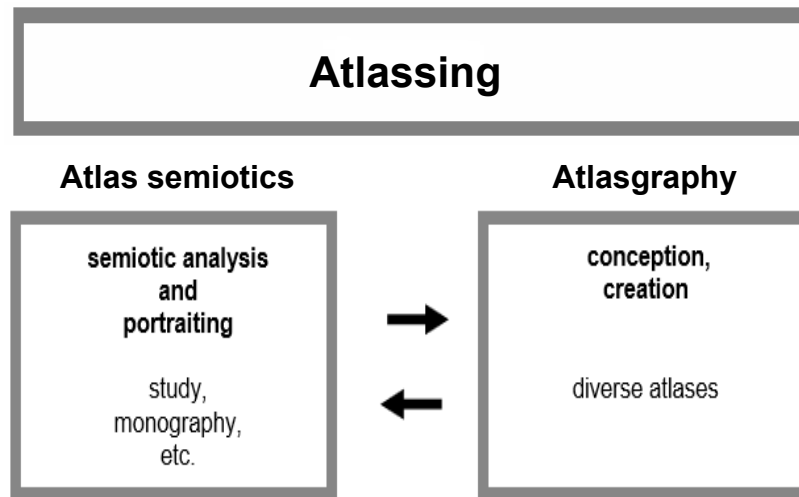


Fig. 4. Structure model of atlassing (Wolodtschenko 2012, 2019)

### 1.4 A new generation of photo-atlases users and new photo-atlas culture

A new generation of photo-atlases (event-photo-atlases, “selfie-photo-atlases”, Christmas greeting photo-atlases, biographical photo-atlases, storytelling photo-atlases, etc.) is bringing forth not just a new generation of users, but also a new photo-atlas culture among young to old generations of our digital society.

### 1.5 Collection of photo-atlases as a “photo-atlas library”



Fig. 5. Screen-capture of atlases of the “photo-atlas library” 2009–2019

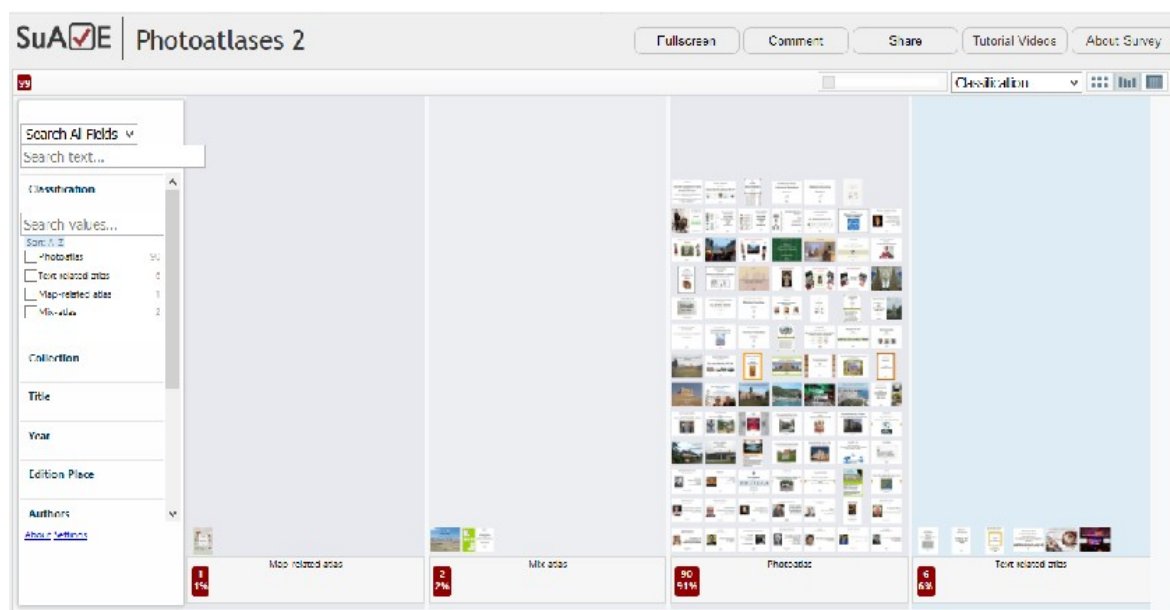
In our project, we deal first of all with a photo-atlas collection as a “photo-atlas library“, or „Bild-atlantenthek“ in German. This collection (Fig. 5) now contains about 120 photo-atlases (2009–2019 available at: <https://atlas-semiotics.jimdo.com/bild-atlantothek>) on ten topics: anniversary-, bibliographic, biographic, Christmas-, environmental, event-, exposition-, derivative, historical and touristic atlases.

## 2. SuAVE as an application for exploring photo-atlases

A new application for semiotic analysis, annotation, and sharing of thematic photo-atlases and their collections is based on SuAVE (Survey Analysis via Visual Exploration), a platform that has been used for analysis of surveys and image collection across several disciplines. (<http://suave.sdsc.edu>). SuAVE visual analysis can help answering research questions related to atlas semiotics, by organizing atlas documents as different data views, providing ways to compare the atlases and visualize them in different contexts of legacy and new data.

The application uses automatic image labeling based on machine learning models, geographic place name identification, natural language processing, and online geocoding and mapping techniques to augment initial atlas images and descriptions and build comprehensive photo-atlas datasets for analysis using spatial data science tools. Each photo-atlas is characterized by semiotic (classification, theme, language etc.), bibliographic (title, authors, year, edition place, number of slides etc.) and communicative (view atlas link) attributes.

The application allows users to save and annotate different views of the atlases, where atlas artifacts are sorted and grouped by any combination of image metadata and characteristics extracted through image and text analysis.



**Fig. 6.** Semiotic classification of photo-atlases

The annotations can be further organized into narrative pathways through atlas documents, to let cartographers and semiotics researchers capture and trace usage of specific symbols and meanings throughout atlas collections, in different cartographic contexts.



Fig. 7. A SuAVE view of photoatlases sorted by 10 atlas themes

The metadata structure (using 99 atlases as an example) includes a semiotic classification of all atlases (Figure 6 shows a saved SuAVE view presenting a semiotic classification of the 99 atlases into the 4 groups described above). This atlas collection used in this project is dominated by photo-atlases (90% of the total number of atlases in the collection). Figure 7 shows a view of the same atlases organized thematically in 10 groups.

### 3. Conclusion

The SuAVE-Gallery of Survey and Image Collections has 9 types collections: Biodiversity and Ecology Applications, Geoscience Applications, IT Questionnaire Surveys, Art History Applications, San Diego and Urban Development Applications, Archaeology Applications, Library and Museum Media Collections, International and Global Projects, and Projects, Professional Associations, and Organizations. Our pilot project "Photoatlases" does not yet belong to this gallery but it can form a tenth type collections of photo-atlas title pages (or slides).

Our pilot project with 99 photo-atlases started in 2019. Like any collection of information products and as one of the types of digital media, the photo-atlases can take their rightful place in online libraries. On the other hand, they can be created by professionals or laymen.

Photo-atlases or illustrative atlases are semiotically classified into four groups of information products and are designed for both a wide range and for special users. There are the semiotic and thematic features of the atlases that will help optimally find your user. One of our photo-atlas-semiotic research tasks is to help give / find answers using SuAVE: What photo-

atlas are needed by whome, when and for what purposes? We are also planning our next project, which will include a collection of photo-atlas title pages for more users to contribute on the Google sheet.

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