

Geolmaginaries – Historic Maps and their perception - a critical analysis

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Abstract. Maps seem to be a universal medium for communication, easily understood and appreciated by most people, regardless of language or culture. They can be, when interpreted as cultural texts, a mirror of culture and civilization. "They do more than describe the areas of habitation, as they locate humans in a **cultural** and **psychological** sense as well". However, what happens to maps when they are produced in a specific **political** context? Are they still universal or do they transfer/communicate a politically influenced and influencing message?

These questions are driving the pioneering interdisciplinary **project Digital Atlas of Geopolitical Imaginaries of East Central Europe in the 20th Century**, DAPRO, that makes maps accessible for research on history and geographical imaginaries.

Keywords: Historical Maps, Map Context, Map Production, Map Reconstruction, Geoimaginaries, Geopolitics

1. Introduction

Nowadays more maps are available than at any time in history. They seem to be a universal medium for communication of all kinds of spatial information or as Brodersen notes "The purpose of the map is always the transmission of Information" (2001:5) regardless of language or culture. However, what happens to maps when they are produced in a specific political context? Are they still universal or do they transfer/communicate a politically influenced and influencing message? Are maps simple depictions of space or do they themselves produce spatial relationships while being created or interpreted? Can we trace back certain influences by implementing context and mapping related analytical frameworks? These questions are driving the interdisciplinary project Digital Atlas of Geopolitical Imaginaries of East Central Europe in the 20th Century, DAPRO.

2. Heading – Again, Mind the Uppercase Letters

2.1. The 'spatial turn' in the humanities

The recent reassertion of space into scientific consciousness is based on the interpretation of seminal works by Henri Lefebvre and Michel Foucault who have put space at the center of their structural and functional interpretation of capitalism. Accordingly, in geography, David Harvey (1982, 1989) repositioned the understanding of space from a given entity to one that is produced or constructed by social life. Thus, a turn to considering space in different ways initiated a decline of historicism, which had privileged time and social dependence over space (Soja 1993) putting the latter in the focus as an important organisational structure of (networked) knowledge (Weinberger 2012). As Cosgrove (1999:7) notes, "a widely acknowledged 'spatial turn' across arts and sciences [which] corresponds to a post-structuralism agnostic about [...] naturalistic and universal explanations and [finally] to the concomitant recognition that position and context are inescapably implicated in all constructions of knowledge." In this realm space functions as a complex organisational pattern for different approaches in social sciences concerned with the influence of globalization e.g. "Spaces of Flow" by Manuel Castells.

2.2. Maps as research object in the humanities

As space claimed scientific territory in the humanities, the understanding of maps and mapping, of cartography and the history of cartography widened in historical science. Among the first that recognised Maps as visual images that offer sustaining notions of historical situations was Jeremy Black. In his book "Maps and History. Constructing images of the past" he analyzed historical maps focussing on historical atlases, that tend to be treated as taken for granted reference books by historians. Thus he identified the "role of images [maps] as a mean of creating perceptions of power and [...] iconographic aspects of political and cultural authority" (Blake 1997:ix). The expanding application of maps in historical and political scientific publications between 1998 and 2006 corroborated that cartographic knowledge was increasingly inherited by different disciplines, either by adapting maps and spatial relations as methodological fundament (topographical turn) or by adopting mapping techniques. In Germany the historian Ute Schneider in her remarkable book "Die Macht der Karten" (The Power of Maps) has put form, function and consumption/use of maps in centre stage moving the use of maps in historical science from mere auxiliary tools to researchable representations of political and cultural spatial ideas. This opened up new interpretations regarding questions on the eminence of maps in political discourse and in contexts of political decision-making.

2.3. Maps: means of communication or representations of power-knowledge

In 1960 Arthur Robinson defined the primary process (he didn't mention a secondary) of cartography as the "conceptual planning and design of a map as a medium for communication" (Robinson 1960:v). The last fifty years have witnessed a proliferation of models focusing on maps as means of communication (map communication models, MCM) comprising such comprehensive approaches as that of Robinson, Moles, Board, Kolácny, MacEachran or Freitag to name a few. The MCM, as a processual model that characterizes mapping as a process of transmitting information (geographic information) via the map from the cartographer to the end-user, accompanied the technological revolution from the computer-assisted printing of maps to computer-based mapping. In the late 80s this predominant paradigm in cartography has been contested. Focusing on the politics of mapping, J. B. Harley in his widely acknowledged article "Deconstructing the Map" (1989) reflected an existing critique of a positivist post-war cartography that was a-political, empirical and separated from context (Crampton/Krygier 2006). He later wrote that "Cartography has never been an autonomous and hermetic mode of knowledge, nor is it ever above the politics of knowledge. My key metaphor is that we should begin to deconstruct the map by challenging its assumed autonomy as a mode of representation" (Harley, 1992:232).

2.4. The need for interdisciplinary research

The coincidence of the above mentioned paradigm shift in cartography with the spatial turn in the humanities lead the way to an unmitigated change in the research on historic maps now focusing on the (geo-)political and cultural context rather than on the mapmaking process, which of still inherits the cartographic communication and production aspect. Thus Harley's demand for a the approach of deconstructing maps should not only reflect on the historical settings in which maps were (purposefully) produced but also on the deployed visualisation approaches and techniques to fulfill the basic function of a map which is to communicate information.

Keates (1984:9) noted that "[...] it is clear, that some [maps] only become a source of aesthetic contemplation after they have lost their original purpose of meaning". However, thinking of the map making environment in 15th century Venice where maps often have been produced for the rich to show their wealth, one can state that aesthetic contemplation was the only purpose of the map. This sometimes counters the aforementioned approach of

critical cartography as a means for map analysis, especially if the context and circumstances of the map production can't be revealed thoroughly.

To unveil and thus to deconstruct a map one should accentuate different aspects which ideally combines the knowledgebase of different disciplines. In this respect the DAPRO makes maps accessible for research on history and geographical imaginaries and will function as a reference source that covers maps and map-production-related topics for the humanities, as well as for research on the history of geography and cartography.

3. The DAPRO-Project

As an interdisciplinary project the "Digital Atlas of Geopolitical Imaginaries of East Central Europe in the 20th Century (DAPRO)" started in 2012, driven by the aforementioned ongoing epistemological turns in the humanities and in research on history of cartography. It combines methods from different scientific disciplines to further unveil production environments as well as representations and patterns on maps. Thus acknowledging not only power and authorities as driving forces in the mapping processes the DAPRO allows a deeper and better reflexive understanding of the processes of map making and map usage by establishing a cartographic framework to uncover historical relevant geopolitical imaginations, which often lead to specific (carto-)graphic patterns used in maps of different provenance covering identical thematic issues.

3.1. The context of DAPRO

The project is funded by Germany's Leibniz Association, in the framework of the "Joint Initiative for Research and Innovation". The work on the digital atlas is taking place within a network of four research institutions of different scientific provenance, which all have already conducted research on different aspects of maps:

- The Herder Institute in Marburg is one of the leading German centers of research on East Central Europe with a large map collection and a comprehensive archive with map-related historical documents.
- The Leibniz Institute for Regional Geography in Leipzig is a research center which in this project focuses on the history and theory of regional geography as well as on geovisualisation and cartography.
- The Georg Eckert Institute for International Textbook Research in Braunschweig has the most comprehensive collection of textbooks on history, geography, politics and social studies world-wide. This is the base for studies how political space, historical concepts and cultural identities are conveyed.

- The Knowledge Media Research Center at Tübingen brings together scholars from cognition and behavioral studies and the social sciences. Their aim is to explore how digital media convey and transfer knowledge to their users.

3.2. Methodological approaches

A special aim of the project is to compare the use of cartographic elements (literally covering some of the topics of standard cartographic textbooks) – rather than utilizing the vague concept of cartographic languages - as a means of visualization in different cultural, political and historical contexts. In doing so, the DAPRO combines various approaches from historians, geographers, cartographers, researchers of educational media, political scientists, and cognitive psychologists.

Regarding the specialization of the partners, Figure 1 illustrates the participatory process in the analysis, distinguishing between the relevant research facilities, where three institutes provide source materials (single maps, atlases, geographic textbooks etc.) from their respective archives, and one a laboratory for cognitive (map user/using) research. The text in italic letters in the institute boxes indicate the methodological approaches and dedicated research agendas.

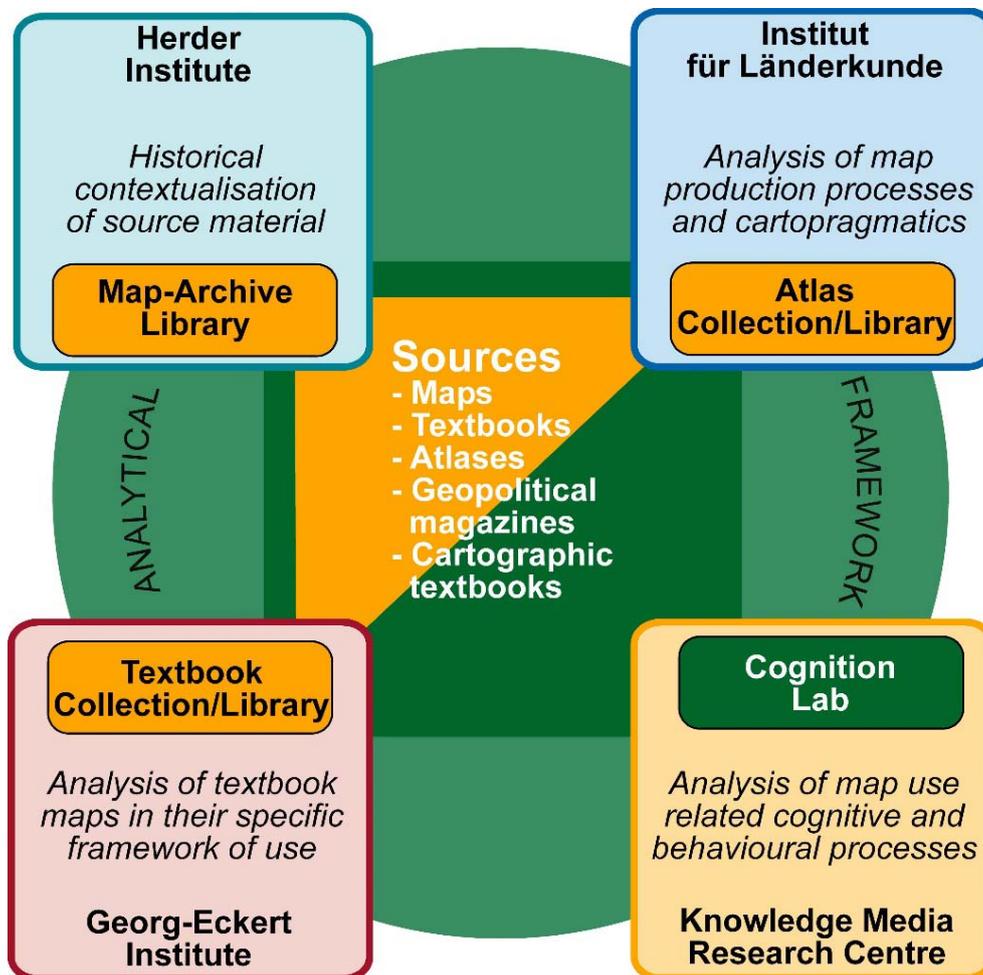


Figure 1. Participation and methodological embedding of the partner institutes (Graphic: E. Losang, Leibniz Institute for Regional Geography)

It would exceed this article's aim to explicate the methodological concepts of the named disciplines (and even more with respect to their epistemological "turns"). Thus the article as far as possible prioritises some "cartographic/geographic" core areas within the project.

3.3. Patterns in space: spatial images, geographic imaginations, geopolitical imaginaries

It is difficult to accurately translate the exact meaning of "Raumbild" without evoking technical connotations - the word itself is simply prone to misunderstanding. To speak, for example, of a "spatial image", one might simply connect it to areal or satellite photography (even after using google).By

talking about geographical imaginations the importance of an inherent geographic knowledge is overemphasized thus manifests in geographic ontologies. By looking at how the categories of space, are recently being thought about in the humanities a promising link to geography/cartography occurs by employing the definition of Geographical imaginaries by Derek Gregory.

Hence, "Geographical imaginaries are taken-for-granted spatial orderings of the world. [They are] more or less unconscious and unreflective construction[s], which refer to spatial ordering and bordering. [They] often act as tacit valorizations that derive not only from the cognitive operations of reason but also from structures of feeling and the operation of affect. As such, they are more than representations or constructions of the world: they are vitally implicated in a material, sensuous process of worlding" (Gregory 2009: 282). What Gregory describes as 'worlding' is the basis of the influence of maps on societies. As a theoretical approach it leads to an explanation of how maps, in their respective contexts of usage, become media of cartographic or geopolitical imaginaries - with great political impact.

3.4. Cartographic analysis framework

The DAPRO-Project focuses on the imaginative spatial images beyond the map and how they are and have been intentionally or unintentionally, constructed, interpreted, perceived, and used. This would normally mean to consider distinctive map communication models. As mentioned above the use of MCM initially leads to a cartographic point of view. Thus, the comprehension of a map is based on individual cognitive processes of "the user", but does not reflect the social, religious, historical or political contexts in which the map has been produced, published and used. Especially for historical maps, produced in countries that experienced territorial changes, this can only be examined while recurring to map production environments in their respective times. This means to not only consider map production processes and utilized map elements (and their theoretical foundation) as well as the use (and understanding) of maps by analyzing them, but also printing techniques and publishing processes while taking the aforementioned specific contexts into account.

For the investigation of historical (political) maps this requires implementing a bifocal analytical framework. Reflecting the modes of use of mapping elements the cartography related framework (Figure 2) consists of a production (map making) related and a cognition (map using) related approach. Transversely thereto the context analysis framework tries to identify and apply contextual (archival) material relating to both processes, emphasizing the socio-cultural and political influences of the respective period driving either the depiction or the reception of the map.

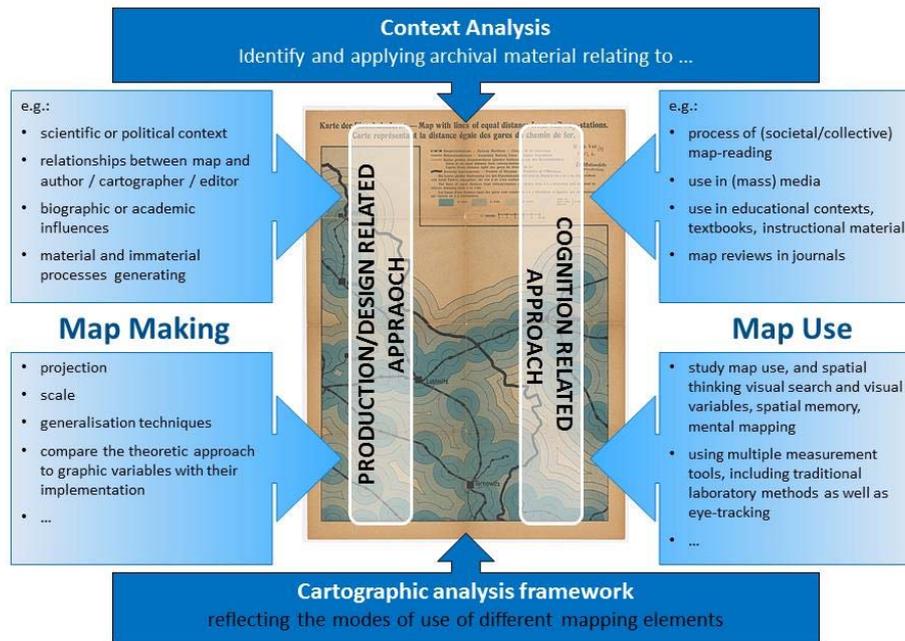


Figure 2. DAPRO - Cartographic Analysis Framework (Graphic: E. Losang, Leibniz Institute for Regional Geography)

4. Geolmaginaries

Based on Derek Gregory's definition of the main object of investigation and for the purpose of shortening the original title of the "Digital Atlas of Geopolitical Imaginaries of East Central Europe in the 20th Century", the complete analysis framework got the working title GeoImaginaries. The complete atlas will therefore be published at geoimaginaries.org.

4.1. Structural elements of Geolmaginaries

For the analysis framework as well as for the atlas there are four perspectives to structure the content. It is important to reflect and to consider the different methodologies and research realities of the scientific fields involved. To connect these to the later output in the user interfaces of the atlas the content was structured accordingly (Figure 3).

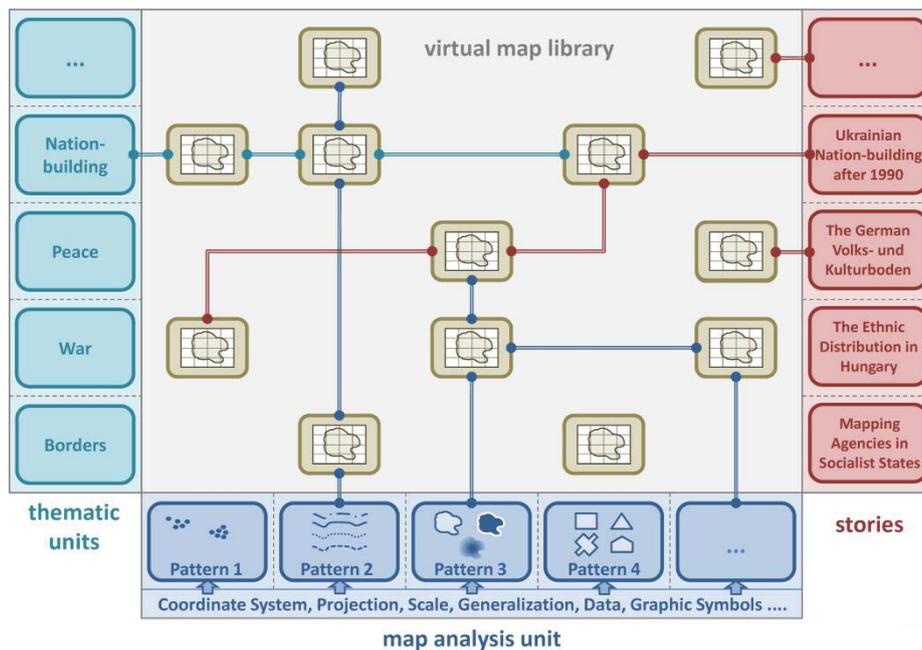


Figure 3. Functional structure of the atlas (Graphic: E. Losang D. Haensgen, Leibniz Institute for Regional Geography)

4.1.1. Map Collection

The principal constituent is the corpus of source maps (virtual map library) which are chronologically and geographically ordered. In addition the metadata of the maps are stored in a relational database, comprising detailed information on the production and publishing context. The map itself is stored in different image resolutions to cover either the wide range of display devices or the possibility of high definition print, depending on copyright issues. The data on maps are complemented by a wide range of additional material (documents, graphics, photos, derivative maps etc.) again related to the production context and use of maps. These are also stored in a database and can be linked to other maps by tagging.

4.1.2. Thematic Units

The atlas has offers several thematic units of varying scope, structuring the content; they reflect specified map content matters such as war, peace,

territory or border. The units contain a brief abstract of the topic and links to related maps and stories.

4.1.3. Stories

Vertical to the thematic units, stories in depth trace certain geographic, cartographic and historic themes as well as biographical notes on persons involved in map making processes. Stories will extend the atlas without modifying the structure of the contents by mainly using tagging-techniques. Whenever a story needs additional content, this will be incorporated in the structure of the source corpus and tagged to the story itself.

4.1.4. Map Analysis Unit

The map analysis unit (Figure 4) is dealing with techniques and visual means of cartographic expressions and map elements and spans across the above named structural parts of the atlas. It is meant to be an educational unit that triggers the interactive process of map deconstruction by reconstruction. Thus the user of this modularly constructed unit can obtain deeper knowledge of the elements and data-visualization techniques that are used in the discussed maps. For example in knowing how to identify a chosen central meridian may lead to a deeper understanding of the circumstances of map production (e.g. the use of the Vienna central meridian in post austro-hungarian ethnic maps).

The unit is based on the assumption that specific basal techniques exist that need to be applied while producing a map. It comprises simplified topics, such as coordinate systems, projection, scale, generalization and cartographic symbols and explains these constituent elements of maps reflecting its significance in the map production and communication process. For example, knowing about the published size of a map and the displayed map area the cartographer normally applies techniques covering the scale, a suitable projection, and the level of generalisation to receive a base map for further use. The purpose is to enable users lacking cartographic background to understand the different techniques and determinations in the numerous steps of map-design, hence to be able to recognize deviations from standard procedures and to tag the respective maps accordingly (Figure 6). A certain amount of knowledge (not the in depth knowledge what the exact projection was used) about these techniques also opens up new perspectives on a more scientific map analysis. There it simplifies the collaborative analysis (e.g. historians, geographers, cartographers) by establishing common basic knowledge of the map production process.

The map analysis unit is based on the synopsis of cartographic textbooks and a continuously expanded collection of historical scientific publications in cartography covering the evolution of cartographic visualization methods and techniques (e.g. the implementation of the point-method in national population density maps). Thus the chosen visualization method in a historical map can be traced back to the respective theoretical basic principal rather than applying modern approaches.

In this respect the unit has been thoroughly tested in seminars on critical reading of historic maps at the Department of Humanities at Leipzig University. Following evaluation and feedback from the seminars a second more individualized test-series has been set up at the cognition lab of the Knowledge Media Research Center.

The second aim of the map analysis unit is to indicate recurring patterns (intentionally) applied in specific thematic contexts e.g. the use of colors and signature types in ethnic maps. Tracing these patterns in different maps from different periods allows us to conclude that different mapping contexts use the same visualization techniques when depicting similar social or political circumstances e.g. the ethnic corridors of the Madjar minority in the central-eastern parts of Hungary or the statistically established german majority in the Neise-Netze area of Poland – both often compared after the Treaty of Versailles.

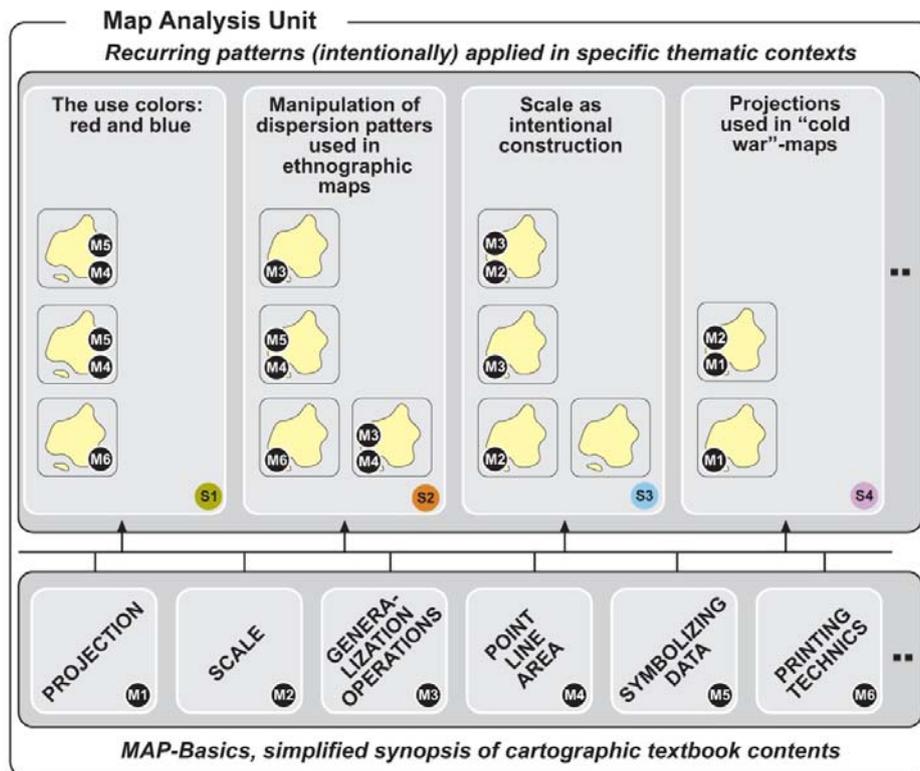


Figure 4. Map Analysis Unit (Graphic: E. Losang, Leibniz Institute for Regional Geography)

5. Interdisciplinary map analysis – obstacles and opportunities

Regarding the interdisciplinary character of DAPRO project their main challenge is to combine not only the research work of four Institutions which are situated well apart from each other but to formulate a workflow that suits particular work methods - not to mention the process of overcoming epistemological and methodological differences. In this respect the project serves as a teaching/learning environment for the participants where they interact in a continuously adapted analysis framework (Figure 1). Therefore the formulation of a set in concrete research design has been altered in favour a more flexible workflow based transdisciplinary and collaborative research environment. However, the following procedures should be

viewed as a linear but an iterative process which characterises the project as a more permanent work in progress (Figure 5).

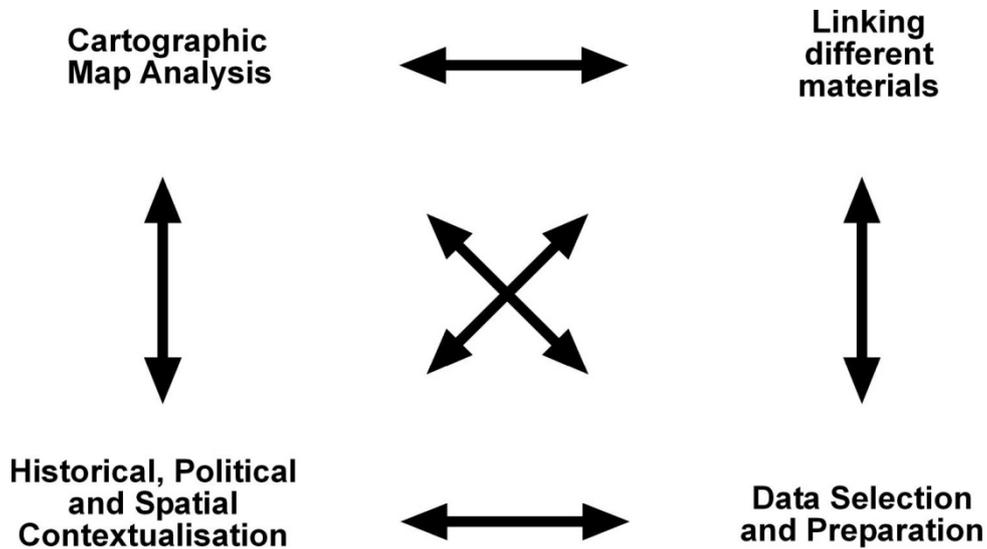


Figure 5. Iterative research layout (Graphic: E. Losang, Leibniz Institute for Regional Geography)

5.1. Data selection and preparation

The map corpus in the Geolmaginaries-Project combines maps of different provenance, with different topics, spatial relevance and creation date. Thus, it is far from giving a representational overview of maps of East Central Europe in the 20th century. Rather than collecting as much maps as possible to possibly provide an empirical foundation of the findings, the compilation based on the archival material of the partner institutions (Figure 2). In doing so, the possibility for an in depth contextualization of a map by using directly (sometimes physically) connected materials could be opened up.

For the inclusion process a collaborative approach was chosen, in which scientist from all institutions were allowed to physically examine of the maps before digitalization to insure an overall acceptance of the chosen cartographic material, also reflecting the disciplinary different approaches in the analysis of the material. Furthermore, the collaborative physical investigation of the material initially generated discussions which lead sometime

to further investigations (e.g. notes on the back of maps, handmade additions in printed maps).

After digitizing, the maps were connected to a database in which metadata and additional information on a map were also collaboratively compiled, considering the expertise in the disciplines involved.

5.2. Historical Political and Spatial Contextualisation

For every the database record should incorporate information about production date, cartographer/author, publisher and the publishing context. Furthermore the historic context is concretised by adding small abstracts about the respective historic context regarding the depicted space. By so compiling a brief history of East Central Europe all maps can be embedded in time- and topic lines which give insight in their possible (sometimes intended) connectedness (e.g. counter maps). This also leads to the addition of relevant material comprising biographic information, photos and supplementary maps (e.g. to unveil the career of certain map content).

5.3. Cartographic Map Analysis

The cartographic analysis is threefold:

By applying the map analysis unit, historians directly connected historical topics to what they identified as “inaccurate”, “conspicuous” or “odd-looking”.

An in depth cartographic analysis based the consultation of cartographic theories and the identification of production methods und publishing environments were applied to identify, if the chosen cartographic visualization method was appropriate regarding the production circumstances.

A GIS based analysis is used to identify certain variation in the course of the borders or anomalies based on the distortion of the (if) applied projection. Furthermore, if the depicted data is available (e.g. population census data, statistical almanacs), a new map is reconstructed by applying the same methods and then compared to the historic map. This often unveils statistical characteristics and oddities which are further investigated consulting other maps of the same period/topic.

5.4. Linkage of different materials

Linking the findings, maps, sources and supplementary materials is done in three ways.

- By directly linking objects that are connected (e.g. link the biographical notes of a cartographer to the maps he has produced or linking a map using isotype to the inventor of that method, Otto Neurath).

- By applying an open, non-predefined tagging system that is a) the basis of an later adjusted thessaus and b) an analysis tool itself to find connections while browsing through the elements.
- Through introduction of the “story”-concept, where the combination of elements and analysis findings is outlined in a short abstract on a map, an identified pattern in different maps or on maps covering special political and historical issues.

6. Outlook

GeoImaginaries was initially meant to be an interactive digital atlas covering the interdisciplinary research on selected historical maps and their contexts and targeting teacher-training e.g. at universities. Thus it was conceived for providing maps and context material as examples for helping with explanation of maps. However, during the development it became obvious that the outline of the atlas needs to be changed:

- The multitude of different historic and spatial contexts in which maps have depicted geographical imaginations, combined with different purposes of maps and their respective mapping (production) contexts is far too complex to be covered by maps of merely three, very specialised archives. As e a result, the research driven addition of maps and contextualised content is inevitable, therefore giving GeoImaginaries the character of a constantly expanding lose leaf atlas.
- Reflecting the adoption of maps as subject in different scientific realms, the deconstructing of historic maps should be realised by associating not only cartographers and historians specialised in particular topics. Instead GeoImaginaries give scientist of different provenance the opportunity to add content to the atlas, use the infrastructure of a map analysis module and the corpus of sources provided? e.g. by the Herder-Institute. In this respect GeoImaginaries will function as a virtual research environment (VRE).

This will widen the content of the atlas by adding different perspectives and by providing the link-up of various topics, regions as well as maps and their production environments. It is envisaged that Geoimaginaries will lead to the targeted comparison of mapping languages in different contexts.

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