

3 ATLAS USE

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3.1 INTRODUCTION

In the previous chapter we have set the conditions under which the atlas can be acquired in order to make it a valid business proposition. Thus, the access by specific groups is guaranteed. But if we want to generate a product that can be acquired, is desired and easy to use by the intended user group, we must see to it that we get to know the relevant characteristics of this user group, find out about their requirements regarding the information they need and the way in which they will get that information from the atlas.

3.2 USER GROUPS

Who are the "personas" (in UCD-speak this are the typical representatives of the various user groups that can be discerned, and of which characteristics and preferences can be described) of the atlas? We can work this out logically by assessing when we came into contact with atlases ourselves.

At an early age we start using school atlases that would become more complex with our age. When we learn to drive (before the advent of navigation systems) we used to learn to deal with road atlases. And when establishing our own home, we would still consider buying a reference atlas, even if the information contained in the atlas can also be retrieved from the Internet, through Google Earth or

This chapter intends to show how to acquire the relevant data. These data, in turn, are needed for a next phase, the evaluation of the atlas prototype (chapter 10).

This chapter will give separate attention to use contexts and tasks to be executed with the atlas and for users and their preferences and characteristics. In short: we pay attention to the "external" use and user requirements after chapter 2 has dealt with the "internal" business requirements.

Wikipedia. The reason why atlases still provide an essential contribution is because the information in them has been processed in a systematic way. Our success in querying information from the web is based on our learning to deal with geographical concepts through our school atlases. Later, when we specialize either in our work or in our hobbies, we will go for more specialized topical atlases. As professional users we might, for instance, depend on the storage function of atlases, e.g. showing all the accessible sand deposits in the underground close to a proposed highway extension; as scientists we would be able to derive knowledge of new relationships between datasets.

User groups that may be discerned (Bakker et al., 1987):

- a) school children and their teachers;
- b) navigators;
- c) interested laymen;
- d) commercial and professional users and
- e) dedicated scholars.

The main atlas use purposes are:

- reference,
- education,
- navigation,
- management and
- scientific exploration

In an ideal world we would be able to describe all the characteristics and preferences of these user groups, but these have been insufficiently analyzed. Wright (1999) has given some insight in the user preferences of the on-line National Atlas of

America. Kramers (2007) refers to an analysis of user characteristics for the topographic maps contained in the National Atlas of Canada, but not to a more general user group characterization. Clearly more research is needed here.

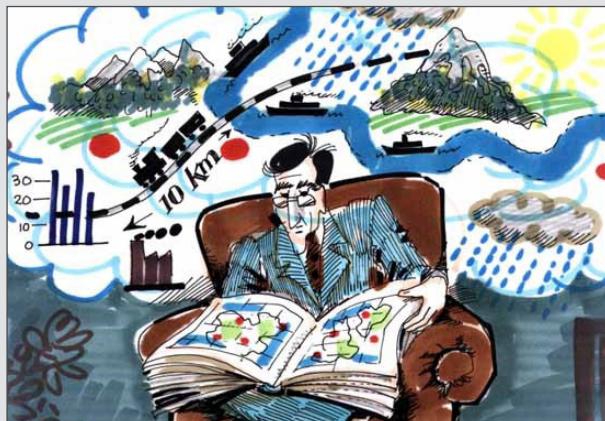
FIGURE 3-1:

PREMEDITATED SEARCH



FIGURE 3-2:

UNPREMEDITATED BROWSING



3.3 ATLAS USES

The main atlas use purposes to be discerned are:

- reference,
- education,
- navigation,
- management and
- scientific exploration (by mapping phenomena one also visualizes the gaps in one's knowledge of these phenomena).

A general consideration for producing atlases would be their ease of handling (just compare handling topographic map sheets or paper road maps with handling topographic atlases or road atlases or visualizing their contents on the screen of one's laptop!).

An even more important consideration is that one is able to select and compare different views on geographical information through atlases: to compare different topics for the same area, different snapshots in time for the same area and topic, or even compare different areas for the same topic and time frame. This requires representation of the data on the same scale, rendered with the same degree of generalization and with similar cartographic modelling techniques.

Selection and comparison can take place during premeditated search activities (for instance when

consciously looking for maps of other themes (such as height above sea level, vegetation, soil) that have similar patterns as a population density map), or during unpremeditated browsing.

Establishment of the atlas contents

As soon as the purpose is set, the contents of the atlas can be selected. The most important aspects here are:

- the area depicted (will the atlas portray only one city or one country or a continent or the whole world?)
- the topic depicted (is it to be a road atlas, a reference atlas, or a city planning atlas?)
- the scale or level of detail (for a reference atlas we expect much detail on large-scale maps, a primary school atlas will only contain small-scale maps showing only the most important items).

Do our users expect to compare all kinds of relevant map topics (as in a national atlas) or only a restricted group of interrelated topics, such as in an atlas of the environment? Or do they expect a standard set of topics, mapped for all the individual areas portrayed?

Another important question is, whether the atlas users would need a nation-wide overview of a topic as well as the possibility to zoom in on specific areas, providing an information increase on the selected topic while zooming in. The latter set-up would call for additional information to be visualized or suppressed when passing specific

3.4 USE CONTEXTS

How an atlas can be used depends very much on its physical aspects: is it printed or does it exist in digital form? More important might be a subdivision of atlases into

- view-only atlases (paper atlases or digital ones that cannot be changed)
- interactive atlases (digital atlases where the users can adapt the presentation of the map contents to their preferences)
- analytical atlases (in which users can combine different data sets contained in the atlas).

Amongst electronic atlases those offered for a desktop environment would have better opportunities for overview maps, while mobile devices used in the field have a major task, while zooming in or out, in keeping the user's awareness of their environment, because of their small screens. For on-line atlases an internet connection is required, and part of the use context is the waiting time for the data, depending on the bandwidth of the desktop's internet connection.

The use of atlases presupposes knowledge of geographical concepts (world, sea, land, continent, boundary, country) at different scales, as well as

scale thresholds. It might also be relevant for the users to be provided with a reference to their home country, so that they can better compare the situation in foreign parts with that at home. If so, small reference maps of the home country situation can be depicted in the margin of the map.

the names they go by.

Learning these concepts and the provision of a topographic frame of reference would prepare users for individual study and analysis of geographical relationships.

Wiegand (2006) has provided insight in map use learning processes for children and Ormelting (1993) has touched upon the specific use of atlases, highlighting the teaching of atlas access techniques (through knowledge of atlas structure, geographical names and thematic indexes, map index sheets, legends and glossaries) and map comparison.

Paper school atlases still play an important role here, as the teaching of geographical concepts requires a controlled environment, less found in digital atlases that are visualized on different monitors with different zoom factors.

Apart from the technical and educational aspects, use contexts also depend on the complexity of the task. This can be a simple way-finding task aimed at finding one's correct direction, or it can be a

FIGURE 3-3:

REFERENCE TO THE HOME AREA THROUGH AN INSET MAP (UPPER RIGHT)



FIGURE 3-4:

SCALE INDEX OF A REFERENCE ATLAS SHOWING WHICH AREAS ARE DEPICTED ON WHICH SCALES. GERMANY WHERE THIS ATLAS WAS PRODUCED, IS SHOWN ON THE LARGEST SCALE.

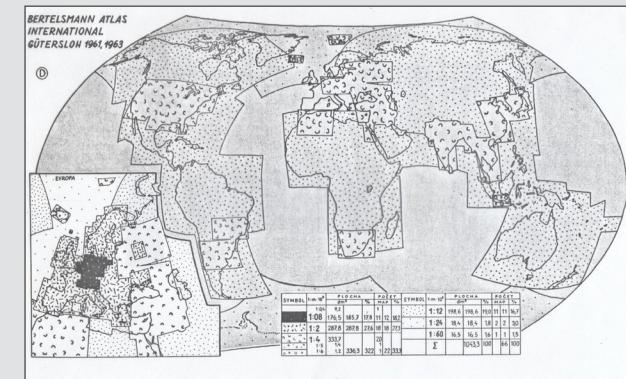


FIGURE 3-5:

ATLAS ACCESS ASPECTS

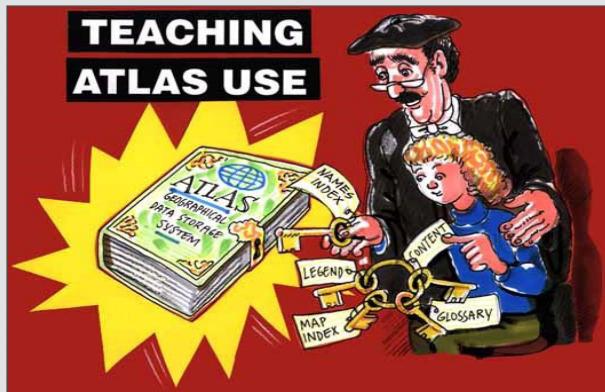
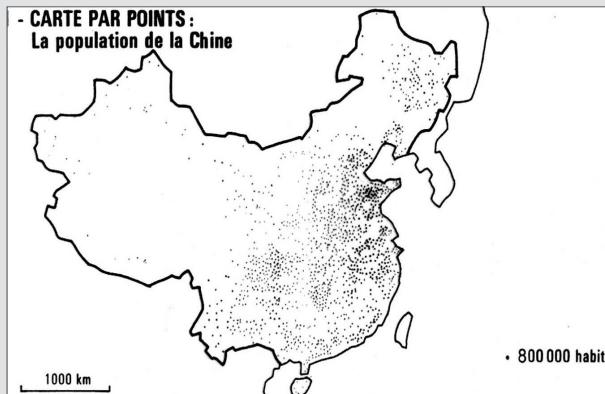


FIGURE 3-6:

WHICH REGIONS CAN BE DISCERNED HERE?



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regional exploratory study in which an area must be subdivided into more or less homogeneous units that can be described on the basis of specific characteristics. The aim of atlas consultation can also be to get an idea of spatial processes, such as commuting or weather fronts moving past, of

spatial relationships (dependencies, correlations or conflicts) or of spatial patterns (differentiation or anomalies: why is population density much lower there than here, despite its adjacency to that big city?). Looking into changes over time would add another dimension to these studies.

3.5 GEOGRAPHICAL QUESTIONS POSED

This section on the geographical questions posed by the users is the most important part of this chapter. Systematic categorization of the most important use and user questions that will have to be answered by the atlas as a whole and the individual maps in it provides the best framework for assessing whether the atlas endeavor has been successful or not. Questions should be linked up to the users, uses and use contexts discussed above and lead to the section on atlas use scenarios discussed below.

For this purpose, one needs to discern different levels of questions or levels of atlas use. E.g. comparing spatial patterns on different atlas maps is of a higher level than looking up a settlement on an individual map.

We presume that digital users, even when they are merely browsing a digital atlas, are always busy trying to find answers to the geographical questions they have (wittingly or unwittingly). These questions may have a different level of complexity and may be coupled to specific use tasks, which may be expressed by means of verbs. For example, for the specific purpose of regional exploratory studies (gaining understanding of, and insight in,

the geography of a particular region, Van Elzakker discerned the set of geographical questions and related use tasks shown in Table 1.

In essence, the use tasks distinguished in Table 1 are already map use tasks, i.e. tasks that can be executed once users already have a map display in front of them. It should be realized that, in the context of a digital atlas, these tasks are preceded by a number of atlas use tasks, based on user questions which are usually NOT of a geographical nature. For example: Is there a digital atlas that can help me answering my geographical questions? Where is that atlas? How can I get access to it? What information does that atlas contain?, etc. Examples of the way these geographical questions and the tasks needed to answer them are given below. A more complete description is found in (Ormelinc and Van Elzakker, 2009).

Question I: What is there / What occurs at a specific point location?

Why would we bother to look for that specific point location in a digital atlas? Because it would be a place where the most detailed information on that country/area could be found. Very detailed spatial information would also be retrievable from the primary