TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Environmental Sciences, Department of Geosciences, Institute for Cartography

Lexical knowledge sources for cartography and GIS – development, current status and outlook

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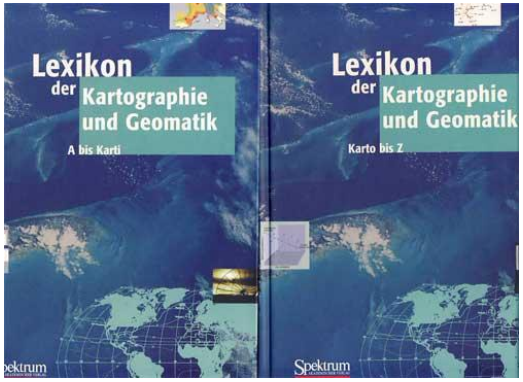
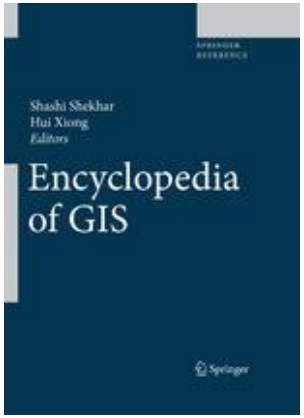
1. Introduction

The aim of scientific research is to require new knowledge.

Current expert knowledge is documented and published in various forms.

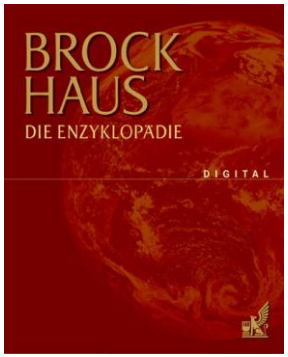
Specialised encyclopedias are especially useful for research and for cartography and geoinformatics teachers and students as well as for laypeople who quickly need to look up technical terms.





2. Review, development / history

In the last century all the encyclopedias were books, often in several volumes. In the new century, the development has greatly accelerated. The transition to the digital world has been a gradual one. The great universal encyclopedias, wich contain a selection of the main terms from subject areas that include cartography and GIS, have been no exception.



Steps in the development of lexical knowledge sources for cartography and GIS:

- *Printed version (available to purchase)*
- *Printed version and eBook (available to purchase),pdf file (free)*
- *Offline versions: CD-ROM or DVD-ROM versions [and USB stick] (available to purchase)*
- *Online version, fee-based*
- *Online version, free*
- *Online version with possible user participation (desirable), free*

The actual revolution in specialised encyclopedias for cartography and GIS began 2001/02:

→ *Encyclopedia of Geoinformatics, online (Lexikon der Geoinformatik, Rostock University) (2001)*

→ *Encyclopedia of Cartography and Geomatics (Lexikon der Kartographie und Geomatik, Spektrum-Verlag), offline: CD-ROM, 2002*

→ *GISWiki, online, 2003*

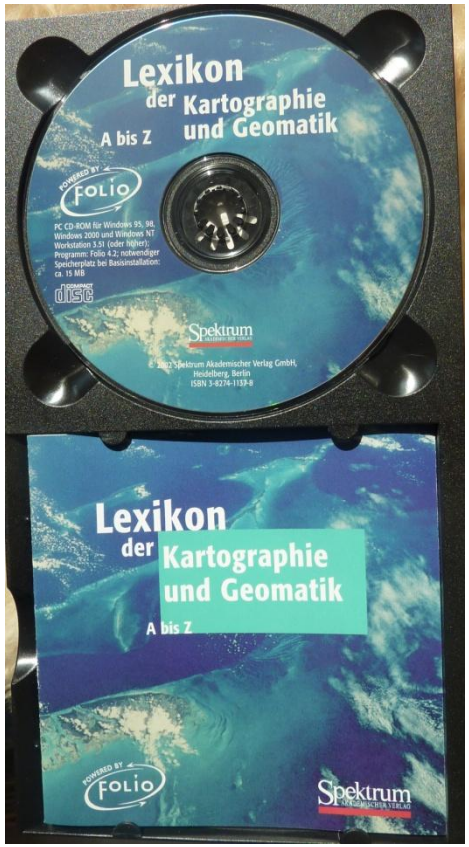
The *Encyclopedia of Cartography and Geomatics (Lexikon der Kartographie und Geomatik, 2001/02)* provides a typical example of gradual progression of lexical versions:

Printed book (2001, 2002).....

→ offline: CD-ROM (2002).....

→ online: fee-based (2003).....

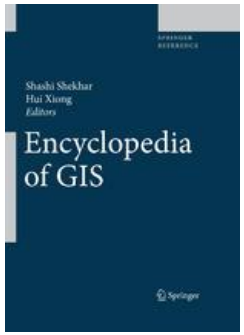
→ online: free (2013).....

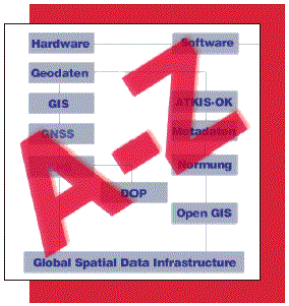


Among the (few) more recent encyclopedias , the „Encyclopedia of GIS“ from US publisher Shekar and Xion (in English, „Springer Reference“) has an entirely different style to that of the Rostock Encyclopedia of Geoinformatics (in German) → 41 Problem areas – typical entries are 3000 words and provide balance among definition, scientific fundamentals, application domains, and future trends.

The German lexikon is part of a GI service of the Rostock University. It contains partly only definitions, partly longer texts.

„History of Cartography“, Vol. 6, Ed. Mark Monmonier, is a book of arranged alphabetical detailed entries.





3. Basic principles and structur of modern lexical knowledge presentation in cartography and GIS contexts

For both printed as well online encyclopedias is to convey the scientific and conceptional structure of meaning.

→ Unified scientific concept !

The selection of terms and keywords will always difficult, even though there are almost no limits to digital storage and presentation.

However, the user should not be faced with an endless flood of information, but rather with a well thought-out set of terms and associated texts from which a basic understanding and knowledge of usage can be obtained.

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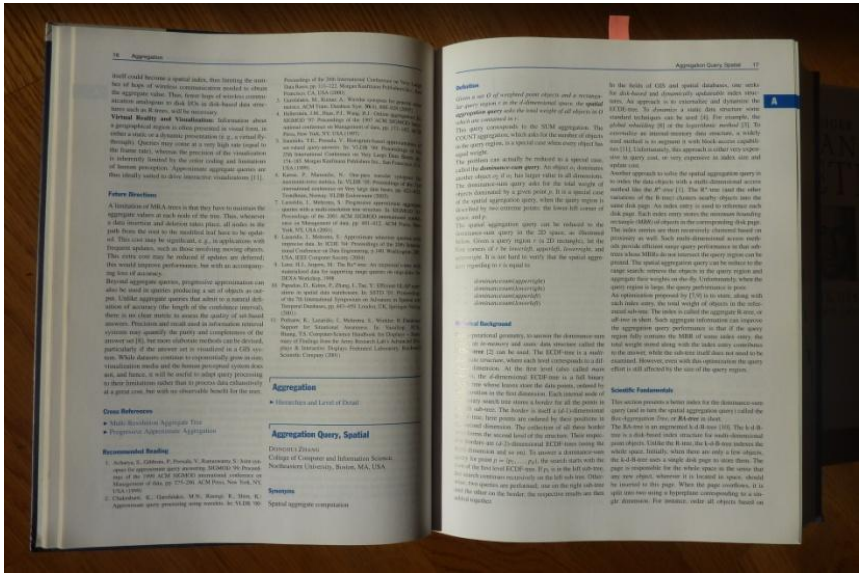
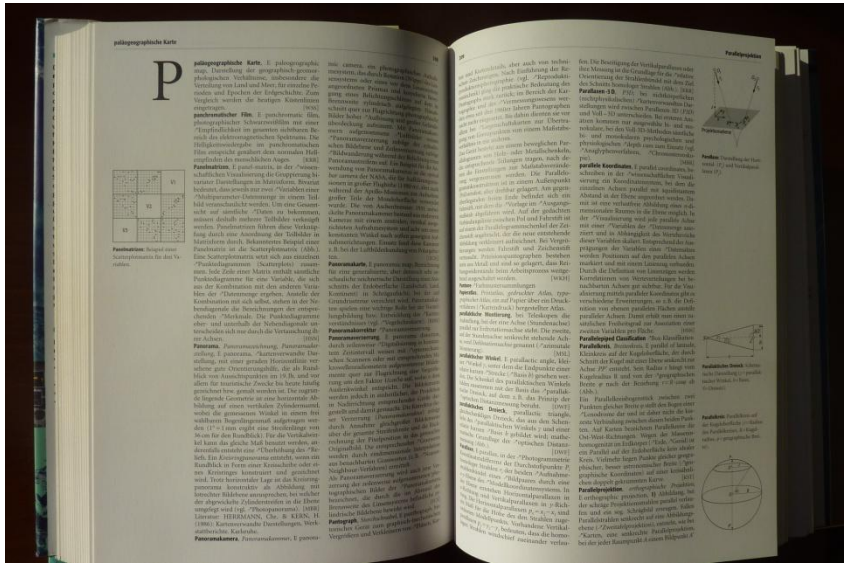
A largely uniform structure of the entries facilitates knowledge discovery from the lexicon. In clear and concise definitions to look for. What follows is a descriptive and explanatory section of text (the main section), with including historical remarks where applicable. – Long Essays will be clearer by intertitles.





4. Users access, knowledge acquisition and knowledge utilisation

The knowledge of encyclopedia should be *reliable, quotable und currently*, *access* to knowledge and its exploitation as *quickly and uncomplicated.*

In addition, ways must be shown to the broadening and deepening of the limited lexicon knowledge.

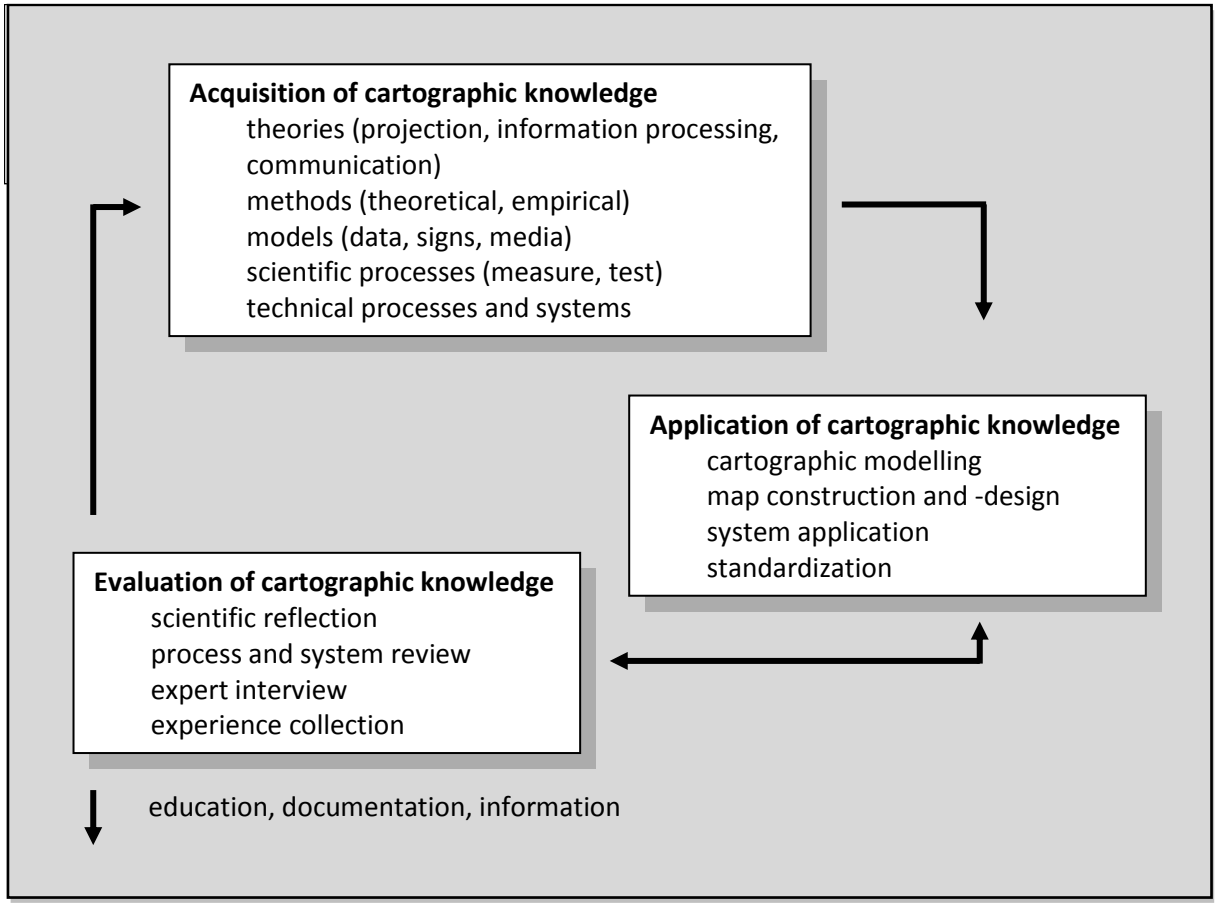
There must be options for accessing original sources, becoming acquainted with more extemsive literature and accessing closely associated or factually related keyword texts via links.

These requirenments can be met in different ways in the individual lexical formats. All encyclopedias with online connectivity provide the best conditions for this.

Even strictly classical encyclopedias can be structured in such a way that terms are easily accessible and the informationis sufficiently interlinked by reference keywords.

But even a static, printed encyclopedia can bei designed to ensure that the keywords resp. entries are oriented toward three (new) scientific methods and fields of activity in cartography and GIS.

An example of this is the (aforementioned) *Encyclopedia of Cartography and Geomatics,* wich contains entries on the *aquisition, application and evaluation* of cartographic knowledge:



Cartographic Knowledge Formation (Bollmann & Koch)

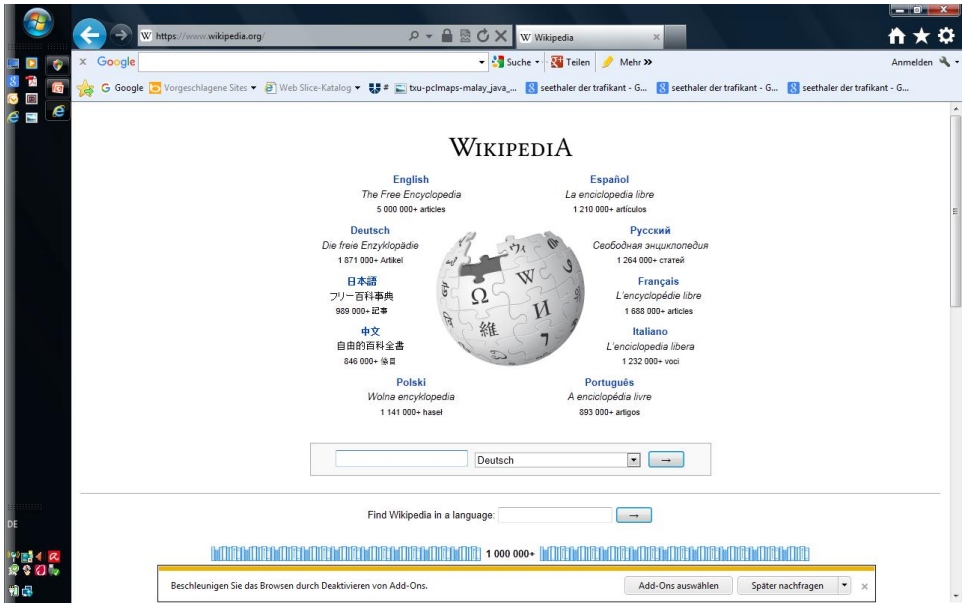
This path toward a dynamic palette of knowledge, *to wich anyone can contribute with improvements and updates („User-generated content, volunteered cartographic information)* has been followed by the GI Lexikon of the University of Rostock (R. Bill) since 2002, and bei GIS-Lexikon of GISWiki, founded by H.-J. Lücking in Bremen.

→ noncommercialised, web-based, dealing exclusively with the conceptual environment of GIS/GIScience.

Technical access to knowledge is no different in encyclopedias in cartography and GIS than it is in other specialist encyclopedias.

In online encyclopedias, term searches usually start with a bar of letters in alphabetic order. A click on the desired initial letter causes all terms that start with that letter to be displayed on the screen, likewise in alphabetic order. Clicking on the desired term displays the keyword text with all components.

The largest *general online encyclopedia* today is the well-known *WIKIPEDIA.* Wikipedia contains a multitude of cartographic and GIS terms/entries that are constantly improved and updated. But there is always criticism. It lacks uniform quality criteria – → „Don´t cite Wikipedia“?



Search engines provide an alternative to dictionaries and encyclopedias as a means of acquiring knowledge. Google, Bing and Yahoo are the most widely known and most used Internet search engines. The selection and sequence of the informative documents displayed varies (to some extent) from search engine to search engine (→ relevance criteria!).

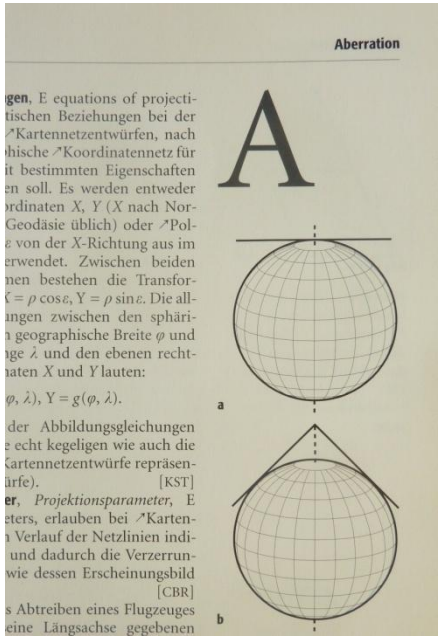
5. Further developments, outlook

Does the existence of the WIKIPEDIA, wich has been collectively maintained by volunteer authors since 2001 and contains ever increasing numbers of entries on cartography and GIS, make the maintenance , further development and new development of all types of independent specialised encyclopedia redundant?

→ Currently and in the near future *they are not obsolete!*

→ *The ideal version of an encyclopedia for cartography and GIScience should be dynamic, interactive and optimally adapted to users, thereby facilitating their work in conjunction with a modern editorial and IT environment.*

→ *Main contents should be still developed collaborative by experts.*



Aberration

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a

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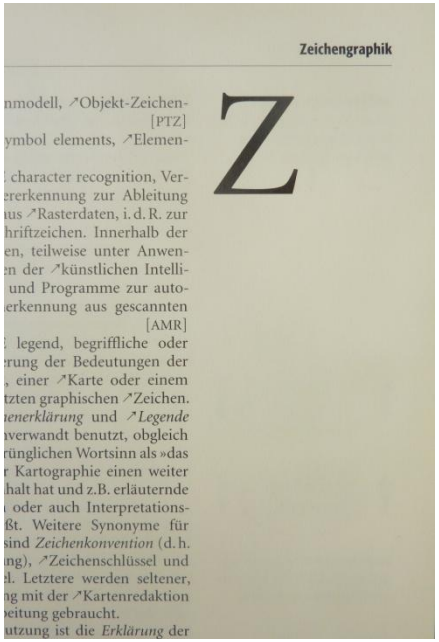
THANK YOU FOR YOUR ATTENTION.

ANY QUESTIONS PLEASE ASK IN THE COFFEE BREAK.



Zeichengraphik

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[PTZ]
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And the future ?

The chairman of the ICA Commission, Dan Jacobson, sees the future of tactile cartography as use of multimodal dynamic computer interfaces –

and its prodecessor, Jonathan Rowell, asks in a contribution for the ICC 2007:

„LBS for visually impaired People ? The Ende of tactile mapping or a new beginning ?“

The interdisciplinary research will answer these and other questions in the future!