



Digitising the past

The beginning of a new future at the Royal Tropical Institute of The Netherlands

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Digitising the
past

39

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Abstract

Purpose – The purpose of this paper is to describe a project to digitise maps at the Royal Tropical Institute, or Koninklijk Instituut voor de Tropen (KIT), of The Netherlands. KIT has an extensive collection of maps and nautical charts of (sub-) tropical regions, including general maps and topographical map series, city maps, thematic maps and national atlases. The collection comprises some 27,000 maps and over 1,000 atlases. Almost 12,000 maps are from the former Dutch colonies, Netherlands Indies (Indonesia), Surinam and The Netherlands Antilles.

Design/methodology/approach – The paper explains how users have access to the maps via the Library's online catalogue. One of the future goals is combining the KIT collections in order to make it possible to search a map and to find accompanying documents, museum objects and photographs and to add more metadata.

Findings – The paper finds that the digitised collection of maps has been used by various researchers as well as by relief workers in the aftermath of the tsunami in Indonesia.

Originality/value – The innovative part of the project is the ability to search by location and to navigate through serial maps. A link with Google Earth makes it possible to compare an old map with a new satellite image.

Keywords Digital storage, Maps, Collections management, The Netherlands, Indonesia

Paper type Case study

1. Background information

1.1 Mission

The Royal Tropical Institute, or Koninklijk Instituut voor de Tropen (KIT), of The Netherlands is an independent centre of knowledge and expertise in the areas of international and intercultural co-operation. The Institute aims to contribute to sustainable development, poverty alleviation, and cultural preservation and exchange. Within The Netherlands, it seeks to promote interest in, and support for, these issues. KIT conducts research, organises training activities, and provides consultancy and information services. Central to KIT's approach is the elaboration of practical expertise in policy development and implementation. The Institute preserves cultural heritage, organises exhibitions and other cultural events, and provides a venue for meetings and debate.

A key objective underlying the Institute's work is to enhance and exchange knowledge and understanding of different cultures. KIT is a not-for-profit organisation that works for both the public and the private sector in collaboration with partners in The Netherlands and abroad (www.kit.nl).



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In 1864 the Colonial Museum began its library collection of maps of the Dutch colonies. These maps dealt with The Netherlands East Indies, Surinam and The Netherlands Antilles. Between 1926 and 1950 it pursued its activities under the name of the Colonial Institute. After the independence of Indonesia the Institute changed its name to the Royal Tropical Institute. From that year on the Map Room collected maps of all other tropical and subtropical countries.

1.2 KIT Information and Library Services

The KIT library collection is one of the largest in Europe relating to international co-operation and development issues, and also has an international reputation in this field. This is complemented by a rich cultural-historical collection relating to the Dutch colonial past. The Information and Library Services department (KIT ILS) has a long history of disseminating information on these issues. The manner of providing services has recently shifted from those of a traditional library to include digital content, online access and electronic services. Most of the large journal collection is now available electronically and the number of monographs that can be accessed electronically is growing dramatically. Databases and web sites on relevant subjects are added to the collection and additional electronic information services for library users are being planned. Initiatives to digitise the cultural heritage collection have already begun and will continue in co-operation with national and international partners. The Library contains over 350,000 monographs, 27,000 maps and 21,000 journal titles (including more than 4,000 current subscriptions). The library catalogue provides access to 340 relevant databases and web sites and 55,000 fully-indexed journal articles. In addition to monographs and journals, KIT ILS has an extensive collection of maps and (nautical) charts of (sub-)tropical regions, including general maps, topographical overview maps, map series, city maps, thematic maps and national atlases. The collection includes approximately 27,000 maps and over 1,000 atlases. KIT ILS also maintains the Tropenmuseum Resource Centre, a source of more general information on the developing world, where one can find books and magazines about various countries, development assistance, travel and culture.

The library collection is enhanced by information products developed by KIT ILS experts who not only work on the department's own products and services, but who also co-operate with partners in the South, in countries such as Surinam, Ghana and Mozambique, with the aim of contributing to capacity strengthening in information technology and information management. KIT ILS designs its information services for development professionals, governments and the business world in the North and South.

In recent years, ICT-related expertise has become increasingly important in information and library services, and this is also a focal area of the expertise within KIT ILS. In addition, KIT ILS systematically cultivates a network of partners in developing countries. Approximately 250 partners, organisations and professionals in developing countries are provided with tailor-made information on a regular basis. KIT ILS exchanges experiences in the field of information management with 75 online community partners.

2. Digitising 12,000 historical maps

2.1 Description of the historical collection

Most of the historical collection dates from the period 1840-1950, and originates from the former Dutch colonies. Approximately 80 per cent of this material comes from The

Netherlands Indies, with the remaining 20 per cent from Surinam and The Netherlands Antilles. As of December 2008, the historical collection consisted of 3,000 journal titles, 20,000 monographs and brochures and approximately 12,000 maps. The earliest map in the library's collection is a printed and hand-coloured map of Culiacan and the Greater Antilles from Ortelius dated 1579. Another rarity is a manuscript version of the earliest map of the whole of Indonesia from Gijsbert Franco Baron von Derfelden van Hinderstein (1783-1857), which was drawn in the period 1835-1837 and was later printed in 1841-1843. Also noteworthy is an early atlas of Indonesia from 1817, marking the re-acquisition of the colony by the Dutch from the British. In May 2009, KIT ILS received a generous donation of approximately 200 maps of the Caribbean region focusing on The Netherlands Antilles, which nearly triples the number of maps dating from before 1850 in the collection.

2.2 Conservation of the cultural heritage collection

In 1998 the cultural heritage collections were examined and evaluated by an international visitation commission. The commission recognised the cultural and historical importance of the collection. Members were concerned, however, about issues such as collection management and preservation. Questions about the physical condition of the collection and accessibility had to be addressed. The preservation of the collection was deemed to be of international importance since it contains sources from the former Dutch colonies, which are not only rare in the countries of origin, but are also insufficiently documented and not always stored under ideal conditions. As a result of a project to preserve the KIT cultural heritage collections sponsored by the Dutch Ministry of Foreign Affairs, the historical library collection was catalogued; selected items were conserved, and transferred to a climate-controlled room during the period 2000-2004. Some 12,000 maps and 250 atlases form part of the KIT Library's cultural heritage collection.

In an effort to allow access while protecting the historical originals, KIT decided to digitise its entire collection of land and nautical maps, mainly from the period 1850-1950 but also from the eighteenth and early nineteenth century, and to make it available online. As a result, one of the largest collections of maps of the former Dutch colonies is accessible via the internet. The project began at the end of 2003 and, after two years of work, all the maps were searchable online. Since KIT was the first organisation in The Netherlands to undertake such an effort, it was not possible to ask for advice or to benefit from the experience of other institutions involved in a similar digitisation project. The planning and organisation of the project will be outlined in the next section.

Figure 1 shows an example of a digitised map from the eighteenth century.

3. Planning and organising the digitisation project

A digitisation project is not just a scanning project. For a successful, sustainable project, it is necessary to plan each aspect: the project goals, mission, standards and procedures.

The key to managing a digitisation project is to have a well-defined project plan. Such a plan helps to make decisions more effectively as the project progresses. Some of the questions to consider when developing a project are:

- (1) Who is the audience?
- (2) What is the desired outcome?
- (3) How will access be delivered?



Notes: (Der Hollaendisch-Ostindischen Compagnie weltberühmte Haupt-Handels und Niederlags-Stadt Batavia, in Asien auf dem grossen Eyland Java in dem Königreich Jacarta Nord-westlich gelegen, [...] auf das accurateste vorgestellt von Homännischen Erben. Nürnberg: Homännischen Erbe, 1733
Survey date 1655-1733
Scale [ca. 1:17.000]
Coordinates O 106°48' – O 106°48' / Z 006°10' – Z 006°10')

Figure 1.
Example of a digitised
map – City Maps
Eighteenth Century Java

- (4) What interface is necessary?
- (5) What materials have to be selected?
- (6) What is the size of the collection and how are the source materials to be prepared?
- (7) Are there copyright restrictions on particular images or documents?
- (8) How to prepare documents for controlling the digitisation process?
- (9) How should access be designed, i.e. choosing and creating metadata? Do the metadata allow users to retrieve the required resource?

It is also important to be very clear about specific needs and requirements. One of KIT's requirements was the ability to search by geographical location and to present the maps

directly by means of the library catalogue. Since software did not exist in 2003 that met KIT's specific needs and requirements, it was decided to develop customised software (viewer) functionalities. This resulted in three unique functionalities:

- (1) One of KIT's requirements was the possibility to switch between the online library catalogue and viewer and vice versa. Users searching in a digitised map in the viewer are able to access the bibliographical record for that particular map in the online catalogue with one click on an icon in the viewer.
- (2) Another (innovative) functionality was the ability to navigate through map series. A serial map is a map from a particular region, consisting of several map sheets, for example, Java is displayed on four map sheets instead of one. The position of the individual sheets in relationship to each other is indicated on a so-called index map. All map sheets must be linked with an index map in order to be able to navigate through the series. For instance in Figure 2, the number of columns and rows in the map series are indicated, and the upper left and lower right corners of the index map must be marked. The computer will then be able to produce a grid across the index map. This only works if every sheet in a map series has the same format and all the maps are linked together. If not, it is necessary to draw a box on every sheet manually. Finally, the correct digital data collection must be linked to the corresponding sheet by activating each box and indicating the correct digital inventory number.
- (3) The last important and innovative feature is searching via the Library's Online Catalogue (LOC) and by geographical location. Via the LOC one can search by title, author or keyword. However, a bibliographical description only mentions

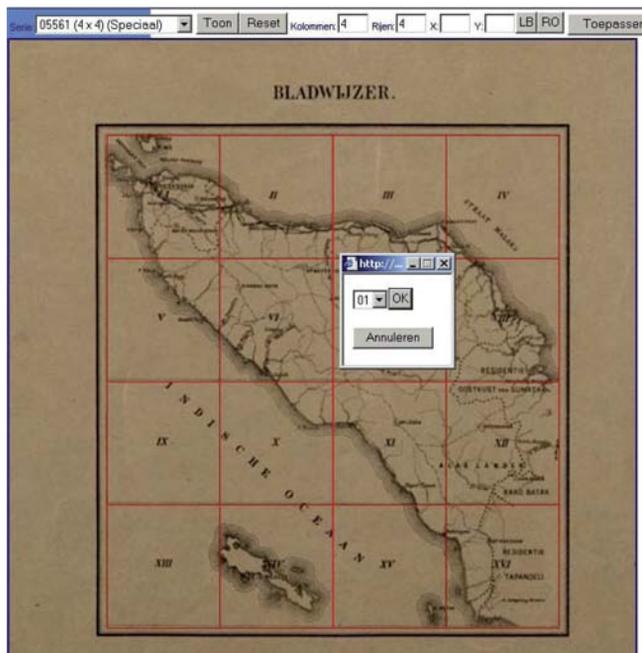


Figure 2.
Navigation through a series of map sheets

the geographical location of the main cities, such as Batavia or Paramaribo. Other locations, which are not mentioned in the bibliographical records, remain inaccessible.

Approximately 300,000 place-names were imported into the database and provided with geographical co-ordinates. The database was then linked to the viewer. As a result, the user is able to search the map collection by location from the viewer. This functionality has made it possible to search for small cities and unknown locations. A link with Google Maps makes it possible to compare an old map with a new satellite image. Datasets of geographical names and co-ordinates can be downloaded from the internet for free. A very important aspect in this process is the conversion of prime meridians. Today, working with Greenwich co-ordinates is the standard. In the case of old maps, however, other prime meridians were used. For instance, maps of Indonesia used six different prime meridians. These had to be converted into Greenwich co-ordinates. The ability to search by location demands that current place-names and their co-ordinates correspond with those on the digitised map. This is why constantly checking the geographical database and adding possible new or alternative names is necessary.

In order to search by geographical location, all map sheets have to be provided with co-ordinates. Within a map series, once the most north-westerly map and the most south-easterly map are supplied with co-ordinates, the computer can then calculate the remaining co-ordinates of the remaining sheets in the series. All exceptions must be provided with correct co-ordinates manually. In addition, it is necessary to indicate on each map sheet where the map itself ends and where the frame begins. By clicking on the upper left and lower right corners, a box appears which demarcates the actual map content as shown in Figure 3.

It is very necessary to be aware of copyright in any digitisation project. If the digitised maps were only to be used for internal use within the KIT then there would be no problem. However, we had to consider the copyright situation and we placed a disclaimer on our web page to explain that we had checked the copyright.

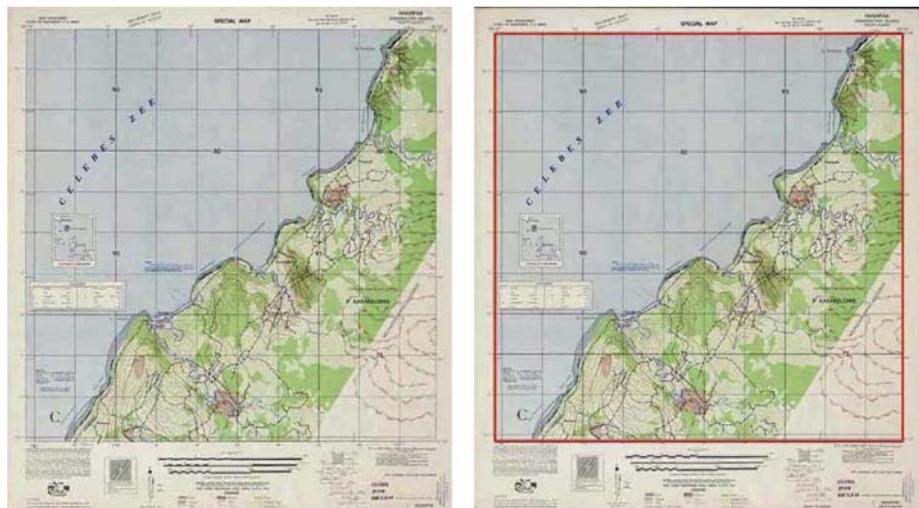


Figure 3.
Example of demarcation
of digital map content

4. How to handle the workflow of the project

The 12,000 maps had to be prepared for digitising and also had to be linked to an appropriate description for the library catalogue.

Before engaging a firm to digitise a collection it is essential to know the exact number of sheets and how many maps there are in various sizes. The next step is to assign a unique digital inventory number to each sheet.

There are a number of things to take into account when numbering the maps:

- maps printed on both sides;
- map series; and
- sheets within a series of different editions.

Before allowing the maps to leave the building, a transport list has to be made containing the most important data, such as the digital inventory number which can be used to trace the catalogue description and the specific information for each sheet. When the scans have been supplied by the firm, it is necessary to check the following:

- Have all the original sheets been returned?
- Do the scans have the correct digital inventory number?
- Are there deviations or variations in colour?
- Is the position of the image upside down or mirrored?
- Other imperfections, such as that shown in Figure 4, which make searching by location impossible.

It is necessary to have a well-calibrated screen.

With the help of a progress list, it is possible to determine whether all maps have been returned after digitising. A progress list can be made by combining the individual transport lists and can be used to keep track of what has been done and what still needs to be done.

TIFF files are used for printing, but for internet use these files have been converted to JPEG format. The last part of the process is providing access by creating metadata and connecting the digital images to the bibliographical records.

5. Use

Now that the maps are accessible online, interest from all over the world has increased and the maps are frequently consulted for scientific research and in the planning of development projects. There are also a number of examples of the importance of the collection for emergency relief. The historical map collection was consulted by Artsen zonder Grenzen (AzG), the Dutch branch of Médecins Sans Frontières, in order to co-ordinate their relief effort in the aftermath of the tsunami of 2004 that affected many islands of Indonesia. The detailed maps, available only in the KIT collection, contain information about every place and village, which enabled the relief workers to locate the specific regions that were affected by the tsunami and to bring help to the victims. Because the maps had been digitised, the relief workers could consult these in the field on a specially made CD-ROM. The collection also serves as a source for international arbitration in determining land and sea borders and preparation of military

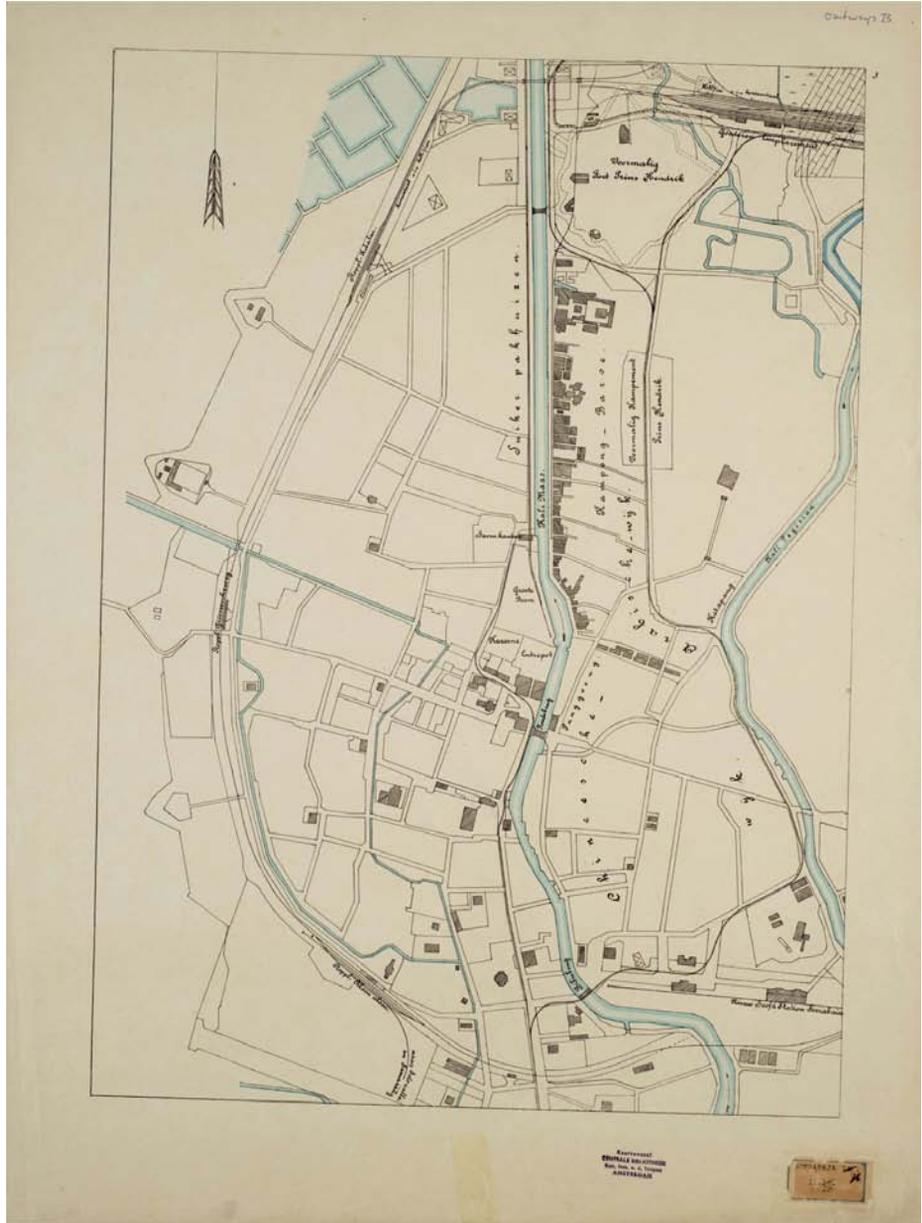


Figure 4.
Example of a “crooked
image”

peacekeeping missions. The same maps used by AzG were consulted by an Indonesian delegation engaged in determining borders since the historical maps are more accurate than more recent maps.

6. Future plans

The historical collection contains a wealth of information that is still relevant to current development problems. In recognition of this fact, the Ministry of Foreign Affairs has provided additional funds to continue the first cultural preservation project. In the second phase, the emphasis will be on digitising books and journal titles in the KIT collection so that it will be electronically accessible worldwide.

An extra benefit of the project is that both the library and museum collections will be made searchable through one interface on the internet. In the future, a visitor will be able to find information not only about documents and historical maps, but also about museum objects and photographs. This is a huge task, but the effort is justified because, by making the KIT collections accessible as a whole, it will create an environment that will encourage research and education and will also play an important role in international and intercultural co-operation and exchange, with emphasis on strengthening the professional heritage sector in developing countries.

Another very important goal is to disseminate the expertise gained during the project, and to support cultural heritage projects in developing countries by means of consultancy and training. The addition of extra historical information and the enlargement of the database with new information, such as street names and plantations, will take place in the near future.

In the coming years KIT will endeavour to supplement the online collection by adding missing maps in co-operation with other institutions that possess cartographical material relating to the former Dutch colonies. It is KIT's policy to digitise new accessions. For example, the generous donation of approximately 200 maps of the Caribbean region mentioned is being digitised in 2009.

The online availability of the historical map collection is responsible for a change in the way the maps are used. The number of visitors to the colonial collection has decreased dramatically, while the use of the digitised map collection has "sky-rocketed". Web 2.0 tools, user-friendly additions and the improvement of the viewer functionalities are just a few of the issues KIT needs to address in the future.

Digitising is not the end but just the beginning of a new future!

Further reading

Van Brakel, K. and Legêne, S. (Eds) (2008), *Collecting at Cultural Crossroads: Collection Policies and Approaches (2008-2012) of the Tropenmuseum*, Royal Tropical Institute, Amsterdam.

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