みんぱくリポジトリ
国立民族学博物館学術情報リポジトリ National Museum of Ethnolo

Khartasia : a Database for Asian Papers

メタデータ	言語: English 出版者: 公開日: 2014-03-24 キーワード (Ja): キーワード (En): 作成者: Laroque, Claude メールアドレス: 所属:
URL	https://doi.org/10.15021/00002428

Senri Ethnological Studies 85: 51–59 ©2013
Research on Paper and Papermaking
Edited by Naoko Sonoda, Claude Laroque, Jeong Hye-young and Chen Gang

Khartasia: a Database for Asian Papers

Claude LAROQUE
Paris 1 Panthéon-Sorbonne University,
CRCC-USR 3224 CNRS Muséum National d'Histoire Naturelle, France

Since the 17th century onwards, when imports from China increased, Europe has known about the existence of Asian papers. Collections of documents and paintings on Asian papers preserved in heritage institutions outside of Asia have rarely been technically analyzed. Thus far, existing paleographic studies conducted on these manuscripts have focused on visual observations of the documents, and collection managers still find it difficult to determine the characteristics of the papers. Currently the Centre de Recherche sur la Conservation des Collections in Paris, in collaboration with several institutions in Japan, Korea and China, is conducting a thorough study of Asian papers, with the final goal of providing Western curators, conservators, historians and archaeologists with a better understanding of the properties and characteristics of Asian papers. These research efforts led to the development of a descriptive and analytical methodology for characterizing the various papers by establishing a rigorous protocol for the identification of raw constituents of the papers and by setting up a database to record reference materials, processes and tools. The content of this database (the Khartasia database) is described in this article.

1. Overview
2. Elements of the current research
3. Khartasia database
4. Conclusion

1. Overview

Europe has known of the existence of Asian papers since the 17th century, when imports from China increased. Over the centuries, paintings, manuscripts, and documents were brought back from the Far East, and Asian collections were created in European libraries and museums. Artists such as Rembrandt used them at an early stage in Europe. The French etchers in the 19th century adopted and developed the technique of *chine collé*, which was very successful.

The papers in these collections are often misidentified, and collection managers have difficulty in determining their physical and chemical nature. Paleographic studies on manuscripts recovered from excavations have mostly focused on visual observation of the documents.

The preparation methods and the chronological evolution of papers in Europe and North America are well studied, but collections of Asian papers preserved in heritage institutions outside of Asia have rarely been investigated from a technological perspective. There are two main reasons for this lack of accurate information: A lack of research conducted in Asian countries holding ancient sources, with the exception of China, Korea and Japan; and a lack of availability and accuracy in European languages publications. The information is scattered in small-circulation publications, and it is often confusing and fraught with translation errors or erroneous technical interpretations.

2. Elements of the current research

In 2010, the Centre de Recherche sur la Conservation des Collections (CRCC) started a program of research to develop tools to improve our knowledge of Asian papers. We expect that these tools will help Western curators, conservators, historians and archaeologists to identify the constituent materials in collections from Asia and also in Western works, especially from the 19th and 20th centuries, that were made on Asian papers. This research could also help to better understand how the trade in paper spread from the major producing countries such as China and Korea to neighboring countries and more distant areas.

A rigorous protocol for the identification of basic paper elements is being developed using conventional techniques of microscopy, as well as techniques based on spectroscopy and chromatography. Protocols for the identification of papers include, in addition to laboratory analysis, a study of the text, ink and other factors based on the methods used in paleography. The convergence of analytical, technological and paleographic approaches will lead to the development of a general methodology to characterize the papers and locate them geographically and chronologically with some precision. The originality of the study lies in the combination of expertise from both the humanities (history, history of technology, ethnography, sociology, paleography, codicology) and the sciences (botany, physics and chemistry).

In addition, a multilingual database—a directory of paper materials—using a standardized vocabulary and photographs to show tools and processes has been created. This database became accessible in June 2012 on the website called Khartasia (http://khartasia-crcc.mnhn.fr) (Fig. 1).

To gain access to historical sources and publications in non-European languages, we are collaborating with research institutes in Japan (National Museum of Ethnology, Kochi Prefectural Paper Technology Center), Korea (National Research Institute of Cultural Heritage, Daejeon; Forest Products and Biotechnology, Kookmin University; and Wood and Paper Science, Chungbuk National University) and China (Fudan University). These collaborations provide direct access to paper samples and paper constituents over a geographical and temporal range much wider than that known in the West. It also allows collection of other elements of the study, for example, tools and photos and videos of production methods. French researchers thus benefit from the experience and knowledge of their Asian colleagues who are

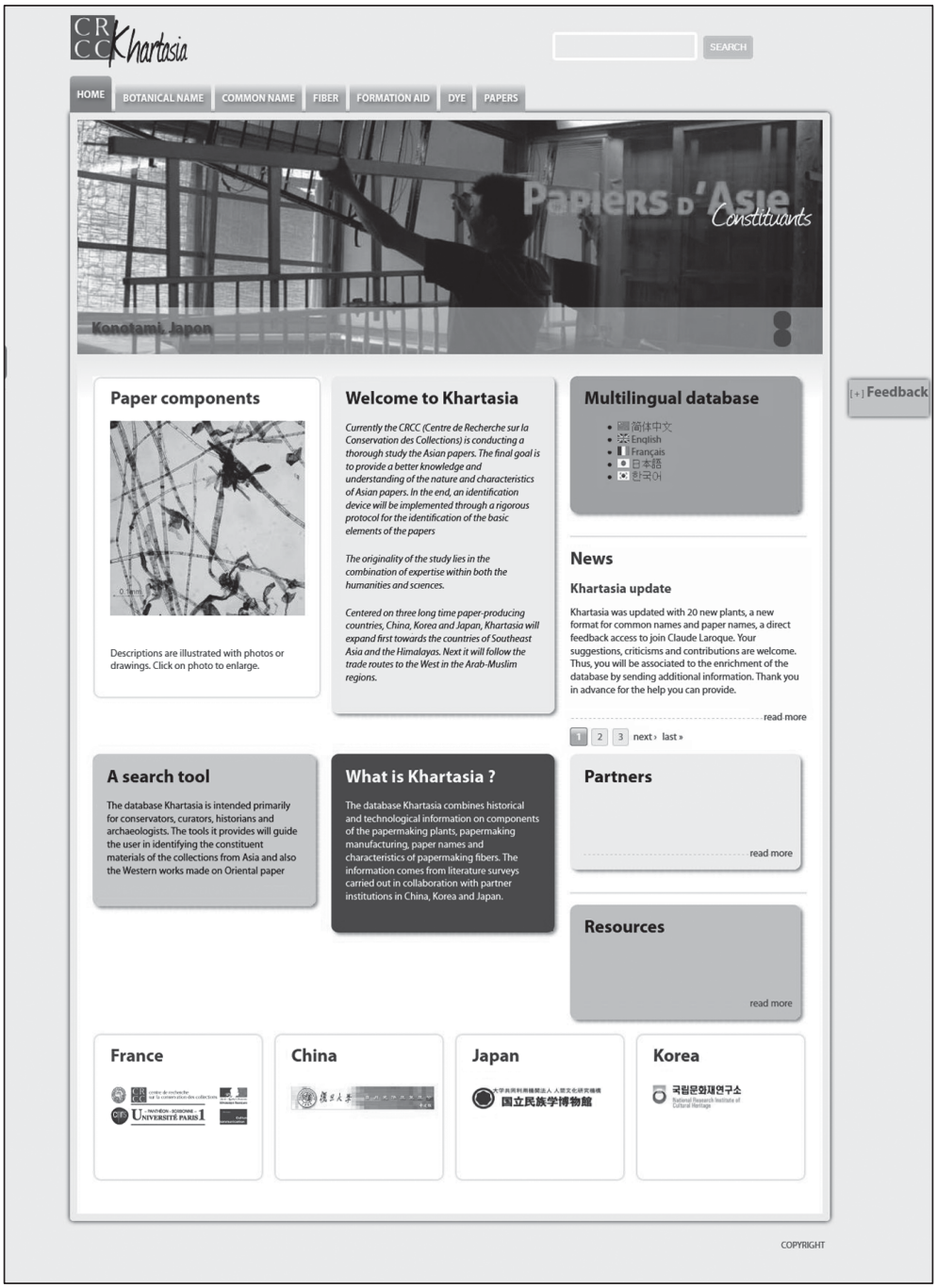

Fig. 1 Home page of Khartasia

more familiar with many of the materials and processes involved in the production of Asian papers.

The database will also preserve information on an industry that is endangered. Europe lost its last traditional paper mills in less than one century, Asia is still in the process of modernization, and will soon experience a similar phenomenon.

3. Khartasia database

Information stored in the Khartasia database is collected from written technical documentation, ancient and modern, from photographs and films, analytical results of paper samples and plants, and other relevant sources.

The overall aim is to gather information on all Asian countries that have historically produced paper. The long-term research will occur in three stages:

- The first stage of the work is centered on Japan, Korea and China.
- The second phase will focus on the countries of Southeast Asia and the Himalayas.
- The third stage will follow the trade routes to the West in the Arab-Muslim regions.

The database is organized around the raw materials, mainly plants, used to make paper, including fibers, dispersing and sizing agents, dyes and paper medicines, but inorganic compounds such as fillers will be also included. The user can make his or her requests by plant names, paper constituents and paper names.

A list of plants is provided in alphabetical order. Each plant is presented under its official botanical name (Fig. 2), followed by its scientific synonyms and common names in English, French, Chinese, Japanese, and Korean. Each plant is placed within its phylogenetic classification (order, family, and genus) (Fig. 3).

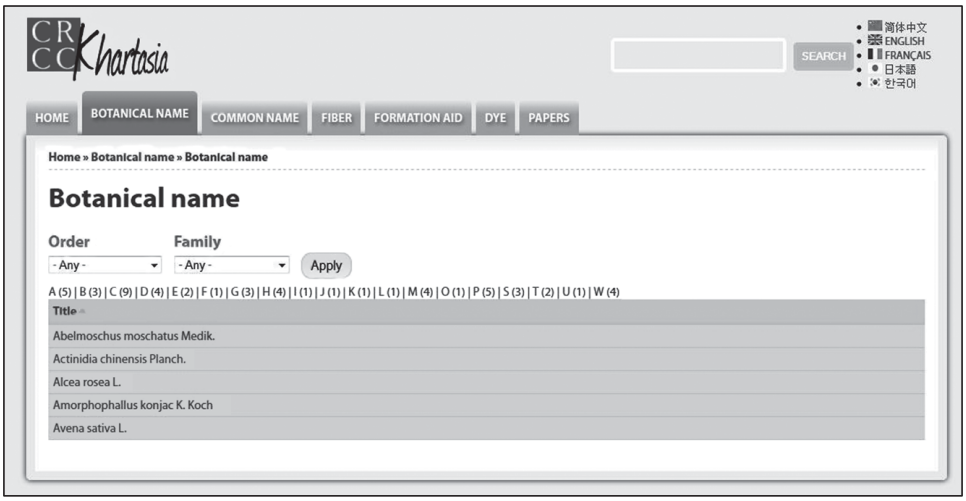

Fig. 2 Botanical name list (first page)

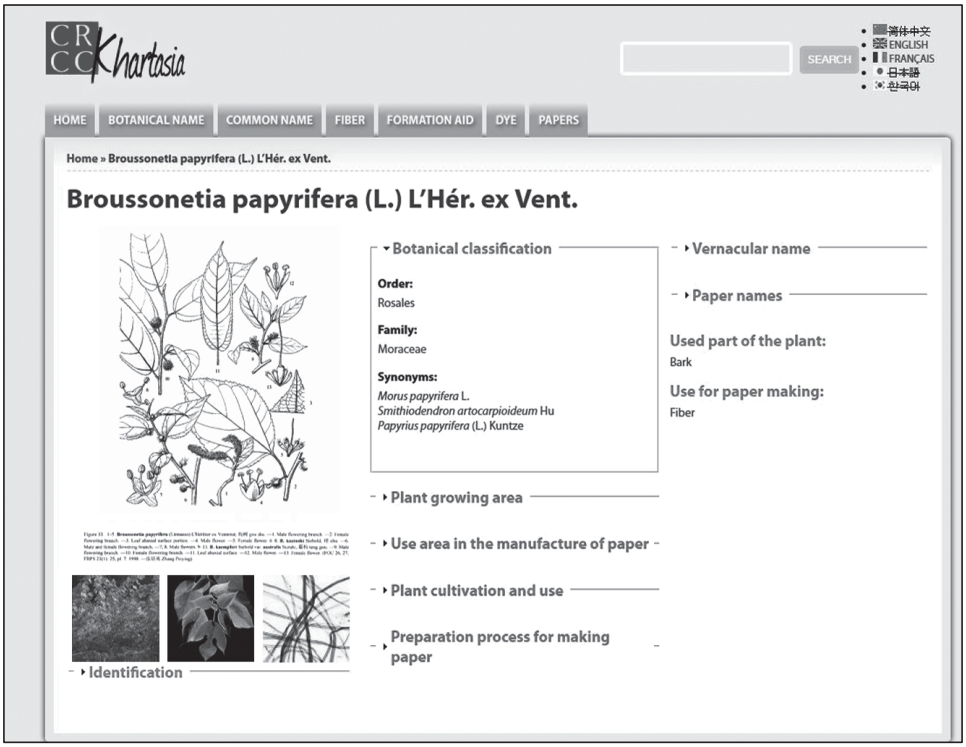

Fig. 3 The descriptive entry for *Broussonetia papyrifera*

Fig. 4 Xingzhuang Ji Jua Village, China: drying of paper sheets

The information is regrouped under four main headings:

- A descriptive section of the plant that includes,
  - The intended use, for example, fiber, dispersing agent, dyes, and sizing agent.
  - The part that is used, for example, bark, stem, wood, root, and leaf.

Fig. 5 Konotani Village, Japan: paper making

Fig. 6 Gyung-Gi Village, Korea: cooking bark with plant ash

- The locations of plant growth and use for papermaking.

The section also includes general information on the cultivation and use of the plant for other purposes.

- A historical section that, for each country (currently China, Korea and Japan), presents the chronology of the use of the plant in the manufacture of paper. Papers made from this plant are presented country by country along with a historical and technological description of paper production.
- A technological section that, for each country (currently China, Korea and Japan), presents a description of how to prepare the raw materials to be used for papermaking. Some examples of illustrations are shown in Figures 4 (China), 5 (Japan) and 6 (Korea).
- The last section is devoted to fiber identification (Fig. 7). The determining elements for the identification of the fiber are specified, accompanied by one or more images illustrating these elements.

Identification

Fibre type	Bast fiber
Average fibre length	10 mm
Average fibre width	28µm (25-35µm)
Fibre ends	Ends of various shapes, pointed or blunt, scalloped, forked, spatulated.
Striations, cross-markings, flexion creases	Faint, Cross-markings.
Associated Cells	Parenchyma cells. Rectangular associated cells which turn blue.
Special features	Irregurlarly shaped fiber ends and walls. Looks like woodpulp (vessels) and straw pulp. Fibers often covered with a translucent membrane which is the most characteristic element of the paper mulberry fiber. Very long fibers. Usually thick but irregular fiber walls with crosses.
Herzberg stain	Red with blue lumen membrane.
C. Graff stain	Red with blue lumen membrane.

Fig. 7 Example of a fiber identification sheet

4. Conclusion

The CRCC launched an ambitious program in 2010 with the goal of developing a better understanding of Asian papers and creating tools for Westerners who are interested in the field. This study is restricted to papers currently produced in China, Japan and Korea but will expand over the next several years to include the widest possible field of paper-producing countries in Asia.

Acknowledgements

The CRCC thanks for their support the Ministère des Affaires Etrangères et Européennes, the Japan Society for the Promotion of Science, and the National Research Foundation of Korea.

References selection

Barrett, T.

1983 *Japanese papermaking: traditions, tools and techniques*. New York and Tokyo: Weatherhill.

Carter, T. F.

1955 *The invention of printing in China and its spread westward*. New York: Ronald Press Company.

Drége, J. P.

1981 Papiers de Dunhuang, essai d'analyse morphologique des manuscrits chinois datés. *T'oung Pao* 67(3–5): 305–360.

Hedin, S.

1898 *Through Asia*. Cambridge: Cambridge scholars. 1st edition.

Helman-Wazny, A.

2005 Recent research on historic paper components in East Asian art objects. *Scientific research on the pictorial arts of Asia*. Proceeding of the 2nd symposium at The Freer Gallery, pp. 58–64. Washington.

Hunter, D.

1978 (1943) *Papermaking: The history and technique of an ancient craft.* New York: Dover Publications.

Mabberley, D. J.

1997 *The plant book: A portable dictionary of the vascular plants*. Cambridge: Cambridge university press.

Mayer, D.

1999 Fiber analysis of selected oriental printing papers. Appendix to The role of China paper in ninenteenth-century french printmaking. pp. 41–43, *Looking at paper: evidence and interpretation.* Toronto Institut Canadien de Conservation.

Pelliot, P.

1953 (oeuvre posthume). *Les débuts de l'imprimerie en Chine*. Paris: Imprimerie nationale.

Rischel, A. G.

1992 Natural plant sizing agents in oriental papers and the importance of resizing such papers after washing. pp. 22–227, Institute of Paper Conservation Conference, Manchester.

Stein, M. A.

1912 *Ruins of desert Cathay: Personal narratives of explorations in central Asia and westernmost China.* London: Macmillan and Co.

Tsien, T.-H.

1962 *Written on bamboo and silk, the beginnings of Chinese books and inscriptions.* Chicago, The University of Chicago Press.

1985 Paper and printing Science and civilization in China. Vol. 5. J. NEEDHAM. Cambridge, UK, London, New York, New Rochelle, Melbourne, Sidney, Cambridge University Press.

Von Le Coq, A.

1926 *Auf Hellas Spuren in Öst-Turkistan*. Berlin.

Wood, F.

1988 The Dunhuang and Central Asian manuscripts and the history of books, Chinese studies. London: Wolfeboro / British Library.

Yum, H.

2008 *Traditional Korean papermaking: history, techniques and materials*. PHD, School of arts and social sciences. Newcastle upon Tyne, University of Northumbria.

Websites selection

Flora of China: www.efloras.org/ (October 2013).

The international plant names index: http://www.ipni.org/ (October 2013).

Multilingual multiscript plant name database: http://www.plantnames.unimelb.edu.au/ (October 2013).

Tropicos: www.tropicos.org/ (October 2013).