

Ancient glass from the Silk Road

Brigitte Borell finds a most welcome English edition of a collection of papers presented at a series of symposiums and workshops in 2004 and 2005, previously published in Chinese. The 24 papers, each one a chapter in the book, are written by scholars from China, Japan, Korea, Uzbekistan and the US, and they reflect the newest research in the field of scientific and archaeological studies on ancient glasses in Eastern Asia.

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Fuxi, Gan, R.H. Brill & Tian Shouyun, eds. 2009.

Ancient Glass Research along the Silk Road.

Singapore: World Scientific Publishing.

473 pages, ill., maps & tables. ISBN 978 981 283 356 3

THE MAJORITY OF THE PAPERS in this volume originate from the field of archaeometry – the application of scientific techniques to the analysis of archaeological material, in this case ancient glasses. The compositions of glasses vary in terms of period and region and the study of their chemical compositions has proved to be an important and useful tool. The categorisation of ancient glass into different glass families or glass systems is based mainly on the intentional use of different fluxing agents in the primary process of making glass. These fluxes offer valuable information about the period and region in which a glass originated. It may also allow important conclusions about trade and trade routes. The basic distinction into glass families may be further refined through studies of trace elements, lead-isotope analyses and strontium-isotope analyses, which provide a valuable supplement for classifying glasses according to geographical origin (chapters 3 and 4 by Robert Brill).

Space does not allow a review of each of the contributions in detail. Where it seems appropriate, some of the chapters will be outlined together in a larger thematic context.

The first two, rather substantial, contributions by Gan Fuxi set the stage and together comprise almost a quarter of the book. In Chapter 1 Gan Fuxi gives an overview of the origin and development of ancient Chinese glass from 'faience' and frit beads (1100-800 BCE) and the earliest glasses (500-400 BCE) through the historic periods up to 1900. Chinese glass production relied mainly on two kinds of fluxing agents: lead and potash (salt-petre was probably used for potash), producing different glass compositions in certain periods. Gan Fuxi's timeline of Chinese glass distinguishes five different periods: (1) He suggests the few early finds of potassium alkali glass (500-400 BCE) originate from Central China. More detailed quantitative analysis would be welcome for future research in this regard. (2) The second or Han period (400 BCE -200 AD) reveals the characteristic Chinese lead-barium glass production generally thought to be located in the Yangzi River valleys and a potash glass which prevailed in the southern and southwestern regions during this period. (3) Post-Han period lead glasses (200-700 CE). (4) potash-lead glass (600-1200 CE). (5) potash lime glass (1200-1900 CE).

In Chapter 2 Gan Fuxi presents an overview of the several routes subsumed under the term the Silk Road, presenting analyses of glass finds from the Warring States period to the Yuan Dynasty, the discussion focusing on the early periods and early trade connections. Four different Silk Roads are discussed together with the glass objects found in their areas: Firstly, glass finds in the

area of the 'Northern (Steppe) Route' show the wide distribution of glasses made in inner China and in the West; a late highlight are the Islamic glass vessels from an early 11th century tomb. Secondly, along the 'Northwestern (Oasis) Silk Road' glass finds from Kiziltur, Xinjiang, dated to 1100-800 BCE, are considered to be local produced but with Western Asiatic glass technology. For the Qin and Han periods, definite imports of Mediterranean and Western Asiatic glass are documented, as well as the spread of Central Chinese lead-barium glass to the western part of Xinjiang. Later, Sasanian and Islamic glasses were imported along this route. Thirdly, the 'Southwestern (Buddhist) Silk Road'; here the Sichuan-Yunnan-Burma-India route is represented by finds of lead-barium glass, potash glass, and a few finds of western soda lime glass in Yunnan and Guizhou from the Warring States to the Six Dynasties periods. Finally, the section on the 'Southern (Sea) Silk Road' deals with glasses found in Guangxi and Guangdong. Hepu in Guangxi was the seat of the Hepu commandery in the Han period and a flourishing harbour and starting point for the maritime Silk Road. Most of the Han period glasses unearthed in Guangxi are potash glasses, many with characteristic Chinese shapes and therefore considered to be locally made, whereas those from Guangdong are mostly lead-barium glass. Both types of glass were probably also exported overseas through the ports of Guangdong and Guangxi. From the Six Dynasties to the Tang period a number of imported glass vessels of Mediterranean and Western Asiatic origin attest to the activity of the ports of southern China, from where such imported glasses might also have been transported north into central China.

A large proportion of the other papers in this volume are devoted to detailed studies on glass finds along the 'Northern' and 'Northwestern Silk Roads' and their chemical analyses. Chapters 3 and 4 by Robert Brill present finds from Afghanistan to Xinjiang with some Central Asian glass compositions of plant-ash soda lime or mixed-alkali glasses. Chapters 7 and 8 by Abdugani Abdurazakov focus on finds from Uzbekistan, which reveal a variety of Central Asian glass compositions from the ancient and mediaeval periods and later. Chapters 11, 13-18, by several Chinese scientists and archaeologists, present glass artefacts and their analyses found in northern provinces such as Xinjiang, Gansu, Shaanxi, Inner Mongolia etc., which allow interesting conclusions on early trade connections. Chapter 19 by An Jiayao discusses the earliest blown Chinese glass vessels found in Northern Wei contexts of the 5th century CE. Referring to a passage on the Western Lands in the *Bei shi*, she suggests that the technique of glassblowing was introduced to northern China by immigrant Central Asian craftsmen from Bactria (the country of the Dayuezhi), who settled in the Datong area.

Several papers deal with glass finds along the 'Southern Silk Road'. Chapters 5 and 6 by Insook Lee set the stage for the Silk Road of the Sea with emphasis on the maritime bead trade.

By the late first millennium BCE, Southeast Asia was part of a world trading system linking the civilisations of the Mediterranean Basin and Han period China. The maritime network is seen as extending to Korea and Japan, where a similar diversity of glass compositions compared to those found in China occur. Chapter 9 by Koezuka and Yamasaki deals with early potash glasses in Japan dated to a period from the 3rd century BCE to the 3rd century CE. In Chapter 10 Akiko Hokura et al. investigate the glass reliquary in the Toshodaiji in Nara, examined with a portable XRF spectrometer; the results suggest an Islamic plant ash glass. Chapter 20 by An Jiayao presents new finds of Islamic glassware found in 10th century contexts in Guangzhou, representing the extent of imports through the port of Guangzhou.

Chapters 21 (Li Qinghui et al.), 22 (Fu Xiufeng and Gan Fuxi), and 23 (Ma Bo et al.) with numerous analyses of glass artefacts found in southern and southwestern China make an important contribution to our knowledge of the extent and frequency of distribution of potash glass and its coexistence with lead-barium glass. Among Han period glasses from Hepu in Guangxi province, potash glass by far predominates (Chapter 21) indicating – in conjunction with statistical analysis on trace elements (Chapter 22) – the making of potash glass in the Guangxi area. The findings on potash glasses are certainly among the most interesting results of research. Since the discovery of the potash glass composition among glasses from southern China in the mid 1980s in the analyses by Shi Meiguang and those by Robert Brill, much more data is now available. However, the question of where the making of the potash glass originated is still unresolved, and is touched upon also by some of the other papers (see below, Brill ch.3.4, Lee 5). It is also found in Japan, Korea, Thailand, Vietnam, Indonesia, and southern India. Different compositional groups can be distinguished within the potash glass family (Lankton and Dussubieux 2006), here future research might further refine regional differentiation. Potash glass was very likely made in different places, one of them was probably in southern China or northern Vietnam. The detection of thallium as a trace element in two potash glass ear spoons of characteristic Chinese shape might indicate that some raw material – or possibly just the cobalt colourant – came from southwest China, where thallium deposits occur in Guizhou (Brill ch.5: 156-158). Whereas the Chinese-made glass objects are usually ornaments, a group of glass vessels made of potash glass, found in of Han period tombs in Guangxi, is of particular interest. The potash glasses and their possible connections with the routes of the maritime Silk Road will certainly remain an interesting field for further studies.

In the last chapter 24, Gan Fuxi et al. present the earliest dated find of glass imported from the West to Central China – eleven eye beads made of a soda-lime glass from a tomb in Xujialing, Henan, dated about 500 BCE. A few more such finds of Western glass are known from the tomb of Marquis Yi, Hubei, and two more tombs from Henan.

Rooted firmly in the field of archaeometry, the volume presents altogether more than 40 tables with chemical compositions of glass found in China, derived from different analysing methods. The emphasis is clearly on the early periods, from the origins of early Chinese glass in the mid-first millennium BCE and its first flourishing production in the Han period. The English edition will certainly be appreciated, and not only by specialists, as it facilitates access to recent results in a fascinating field of research. For the more generally interested reader a more careful proofread, in particular with regard to the rendering of geographical names, would have been helpful; these, however, are minor flaws. The volume will serve as a new compendium for studies on early Asian glasses, in the same way that, for almost two decades, the 1991 English publication of the Proceedings of the 1984 International Symposium on Glass, Beijing did.

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