Stone Beads of South and South East Asia – Archaeology, Ethnography and Global Connections

Alok Kumar Kanungo (Ed.) 2017. Gandhinagar and New Delhi: Indian Institute of Technology Gandhinagar and Aryan books International

What is it that makes the ubiquitous bead such a fascinating and crucial component in understanding the character and changes of archaeological and ethnographic horizons across time? The superb photographs in this book would tempt one to suggest that it is their sheer beauty, and the marvelous shapes and finishes that a range of stones are given, that makes beads among the most attractive markers in the archaeology of South Asia. Beyond beauty, as Alok Kumar Kanungo's edited volume on this subject demonstrates so well, what makes them vital are the large number of ways in which all kinds of information can be recovered from them. These range from insights relating to trade and technology, and to the social and cultural histories encoded in their crafting and production.

A series of chapters here deal with the allusions to beads in various literary sources and to their presence in archaeological contexts. These range from overviews (such as the chapters authored by Kishore K. Basa, R.S. Bisht, V. Selvakumar) to case studies (Mehrgarh, Dholavira and other sites in Gujarat, the Deccan, South India and Ahichchhatra). Using stones to manufacture beads was the innovation of microlith users, as Rabindra Kumar Mohanty's overview points out, at places like Jwalapuram in Andhra Pradesh, around 35,000 BP where limestone and quartzite beads and those of bone were found. The ostrich eggshell finished and unfinished beads that figure in other contexts were perhaps as old as those from Jwalapuram. Among these, as Mohanty points out, the bead-bearing level at Khaparkheda in Madhya Pradesh has provided unique evidence for every stage of manufacturing, ranging from chipped eggshells to the tiny chert points which had glue/resin on them (for facilitating easy rotation when hafted to a shaft). Here too, bead making was undertaken.

In most other regions, bead making as a craft developed and consolidated in neolithic and chalcolithic contexts. The site of MR2 at Mehrgarh in Baluchistan has an entire lapis lazuli industry (Massimo Vidale, Maurizio Mariottini, Giancarlo Didoti and Muhammad Zahir) where there is early processing waste, debitage from the production process, drill bits and a range of beads including star-shaped and pouch-shaped ones. In the case of Datrana in Gujarat, this developed as part of the recycling of stone debitage generated in the course of manufacturing long blades. The circular beads made there used waste stone, what Kuldip K. Bhan categorizes as the platform rejuvenation pieces. The identification of raw material re-use in various archaeological contexts, in fact, has been identified in the case of metal and shell artefacts as well, and is a pointer to an important, though, understudied aspect of ancient artisanal traditions. In historical times, the exploitation of all kinds of ordinary and semi-precious stones for manufacturing beads is excellently showcased in the gemstone industry that has been unearthed at Kodumanal in Tamil Nadu, as K. Rajan's contribution to this volume reminds us. Among the repertoire, it was beads of sapphire, beryl, agate, carnelian, amethyst, lapis lazuli, jasper, soapstone and quartz that were unearthed from the habitation mound. Interestingly, those in the graves of Kodumanal were beads of carnelian, specially etched ones, and agate. These are raw materials that were procured from the Gujarat and Maharashtra regions while lapis lazuli came to Kodumanal from Afghanistan. There is also a very interesting paper in this volume (Bunchar Pongpanich) on the ancient stone beads found in various parts of Southeast Asia, with a special focus on Thailand. Incidentally, beads bearing the *triratna* symbol have a distribution that stretches from Taxila to Thailand.

Several papers focus on the technology of bead production and their scientific analysis. V.N. Prabhakar's documentation of the Dholavira stone drills, primarily made from 'Ernestite' whose source is not yet ascertained, mentions 1603 specimens. These are of various types and reveal the optimum use of raw material. Actually many in the collection were modified and reworked from broken drill bits, once again revealing that even broken artefacts were reused by craftspeople. J.M. Kenoyer's study looks at the entire repertoire of techniques, from the time of raw material selection to the polishing of beads. Some of these techniques, as he points out, changed over time. By the end of the Harappan period, the use of the Ernestite drill disappeared. On the other hand, the colouring of agate to create a dark black or brown-banded agate, which began during the Harappan period, expanded in the Late Harappan and continued to be used in Early Historic India. As for the scientific analysis of stone beads, Laure Dussubieux and Mark Golitko look at lapis lazuli sources and beads from Kish, rather than from a South Asian site. Interestingly, the Kish beads were expected to have been manufactured from Afghanistan lapis lazuli. However, they did not match the raw material that was analyzed from there. Possibly, a more extensive sampling of source areas needs to be done, including those in Pakistan, in order to suggest a source for the Kish beads. Randall Law's contribution concerns how one bead from a Late Harappan hoard at Harappa has been identified and characterized through non-destructive analytical techniques. This, a tiny red bead, which was thought to be glass, has turned out to be a hardened hematitic kaolinite (a clay mineral).

There are several contributions that concern the ethnography of bead usage. An instance in point is the contribution on the symbolic value and trade of stone beads among the Nagas by Manabu Koiso, Hitoshi Endo and Ayumu Konasukawa. Necklaces of various types are worn by women and men. There are those which are used on an every day basis which are made of one or two lines of carnelian beads, the source of the carnelian being mainly from Khambhat. On the other hand, those reserved for special occasions were more elaborate and had ten strings or so. Carnelian bead use has a long antiquity in Nagaland. One bead is known to have been found at Chingliyimti in Tuensang district (c. 9th-10th centuries CE) while others were found from a 17th century burial at Jotsoma near Kohima. Khambhat forms the subject matter of Alok Kumar Kanungo's paper. Interestingly, Cambay itself does not have the stones for the craft that has made it famous, these come from elsewhere. Rajpipla, for instance, is an important provider of agate stone. The changes in technology are recorded by Kanungo – such as those of the grinding and polishing methods, as also in the final polishing. At the same time, he also points out that there has been no change in the drilling of long beads, which continues to be done by hand using a method known as the bow drilling method with the use of diamond-tipped drill bits. The use of diamond for drilling beads can be traced back to Mauryan times (c. 3rd century BCE) while during Harappan times, a hard stone like Ernestite was used for drilling.

Given the title of the volume, one would have expected more contributions on Southeast Asia. Instead, the volume is primarily about the beads of South Asia. Still, there are good papers here and worth reading, for their individual content or as a collection of papers.

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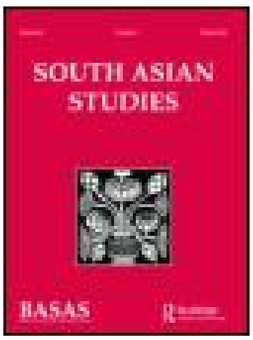

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Stone Beads of South and Southeast Asia: Archaeology, Ethnography and Global Connections

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Book Review

Stone Beads of South and Southeast Asia: Archaeology, Ethnography and Global Connections, edited by Alok Kumar Kanungo, Gandhinagar, Indian Institute of Technology Gandhinagar & New Delhi, Aryan Books, 2017, xvi+444 pp., illus.col 250 b/w 116, INR 4,500 (hardback), ISBN-13: 978-81-7305-585-0

Archaeological objects, even minute beads, are not mere objects *simpliciter*, rather they have layers of signification across many planes, be they archaeological, technological, scientific, relating to material culture, and the like. The book, *Stone Beads of South and Southeast Asia: Archaeology, Ethnography and Global Connections*, is based on the proceedings of an interdisciplinary workshop on History, Science and Technology of Stone Beads at the Archaeological Sciences Centre, Indian Institute of Technology, Gandhinagar, with leading experts in South Asian archaeology.

Objects or artefacts as archaeological markers partake of many aspects such as the processes that produce, the things they use every day, analysing the economic and social history of the objects as also their relevance to the material culture, and, consequently, the people whose form of life they are part of. In archaeological reports, the Introduction to the book comments, beads, courtesy 'their smallness', tend to be overshadowed by showier and larger objects such as pottery and terracotta. However, it is their very size that allows beads to be portable, and thus their study is of salience for global connections of cultures, in this case of South Asia with the world.

The book has four sections. Of these, the first discussing the importance of and literature on beads is perhaps the most comprehensible to non-specialists in so far as it enumerates Sanskrit and Tamil literary and epigraphic references to the bead-making industry and its social and ritual significance.

Kishore K. Basa's chapter, 'Small Find, Immense Impact: Importance of Bead Studies', is an overview of the research undertaken on stone beads in South Asian contexts and also in terms of beads as markers of four interrelated phenomena: typology, technology, trade and exchange, and symbolic value, which also define the parameters of the themes discussed in the rest of the articles.

R. S. Bisht insightfully traces and comments on the continuity of the Harappan civilization into the Vedic, saying, 'The Ṛig Vedic terra firma comprising Punjab, Sindh, Haryana, north Rajasthan western Uttar Pradesh, and Gujarat corresponds well to Harappania of yore' (p. 26). While acknowledging that these are in the domain of proto-history, he alludes to the technique of sewing beads on garments described in the *Yajurveda* to make meaningful patterns as seen in the bearded man of steatite from Mohenjo-Daro. Bisht's article underscores text–artefact correlation in Vedic and post-Vedic literature, especially in the references to *ratna* and *maṇis*, and artisans involved in making these in the *Arthaśāstra*. The connections between source areas, literary references, and actual excavated material cultures, however, are clarified only from the historic period onwards.

An interesting approach to reading archaeology is seen in the textual analysis of early *Tamizh* texts and epigraphs pertaining to sacred gemstones, '*Ratnattin Tiruvābharaṇaṅgal* of *Brihatīswarā* Temple' Beads and Ornaments in Early Tamizh Texts, both by V. Selvakumar. He especially highlights the *Chozha* records enumerating the quality and quantity of each donation and even the source from which these jewels were acquired, revealing the economic status of the temple as well as the piety of the donor rulers. These references unfortunately cannot be identified with the current collections, as the 'terms and parts of ornaments mentioned are no longer preserved in contemporary society'.

Given this limitation, a useful approach to study archaic material is through ethno-archaeology, covered in the second section of the book, which explicates on the technology and crafts traditions of bead-making, especially of the Harappan civilization and related cultures, and on the symbolic value and trade of beads for the Naga tribespeople.

The intensive studies by Jonathan Kenoyer on the artefactual history of the Harappan civilization over decades are well represented in the book. He gives the history of stone beads and drilling in South Asia through a study of raw materials as well as the communities that converted these into beads through heat treatment, drilling, shaping, colouring, and mounting beads into ornaments from Mehrgarh to current Peshawar. In another article, Kenoyer specifically looks at the

typology, technology, and documentation of stone beads, significantly tracing their history through the chronological framework of the Indus tradition, such as 'the discovery and development of constricted cylindrical drills using hard stone, Ernestite,' (p. 154) during the Harappa Phase, which allowed beadmakers to produce long and slender carnelian beads used for trade in other regions as far west as Mesopotamia.

As is demonstrated by two articles in the current volume, Kambhat or Cambay, with its continuous tradition of production and trade in stone beads, is significant for studying the history and ethno-archaeology of the bead-making industry. The first article, by Bhan, Kenoyer, and Vidale, looks at the workshops, guild organization, actual production processes, transactional networks, and gendered division of labour. The second, by Kanungo, studies Kambhat through an ethno-historical lens, tracing the history of Cambay mainly through colonial records, especially with reference to beads and their production. The description of guilds and their changing structures, including the gendered nature of work in post-colonial society, makes a valuable addition to the history of industrial organizations and their decline.

Given the nature of South Asian archaeology that in its practice has usually privileged exploration of regional cultural extension as well as chronological cultural sequences; case studies from South Asia receive maximum attention in the volume. Harappan lapidary traditions are comprehensively examined. Evidence from early historic layers such as from Ahicchatra, rather summarily presented here by Bhuvan Vikrama, deserves further enquiry.

The first site examined is Mehragarh, one of the earliest sites to exhibit coherent stone bead-making, with specialization mainly in lapis lazuli and carnelian.The trace of vegetal glue resin found from the site makes it unique in the pre- and proto-historic paeleo-technological environment. Vidale, Mariottini, Sidoti, and Zahir challenge Law's widely held view on sourcing of raw material, using X-ray Diffraction (XRD) data to identify the precise mineral content of different stones and thus probable area of origin. Based on their study, the authors assert that shared knowledge of technology between the Eastern Iranian Plateau and the upper Indus basin of the fourth millennium BCE should not be attributed to trade contacts, but as a result of 'a general diffusion of this technological adaptation among the wider contact of craft communities of Middle and South Asia from 4000 to 2000 BCE' (p. 251).

Three papers discuss bead-making techniques found from sites in and around Gujarat. These include an overview, 'Stone Bead Production Through The Ages,' by Kuldeep Bhan; an exploration of shops, techniques, and source bases from early Harappan sites such as Datrana, tracing material remains of beads and work of contacts with other centres by P Ajithprasad & Marco Madella and a comprehensive survey of stone drill making at Dholavira by V.N Prabhakar.

Discoveries of amuletic beads and figurine beads based on Indian mythological and religious symbols such as *triratna* summarized by Bunchar Pongpanich from two major sites of Bon Don Ta Phet and Khao Sem Kaeo in Thailand and minor sites such as U Thong along with Tamil inscriptions identifying a goldsmith's touchstone from Klong Tom raises further questions about the archaeological context to the 'Indian connection' with Southeast Asia.

The fourth section is devoted to scientific analysis of stone beads using XRD and Scanning Electron Microscopic analysis on the drills, stones, and finished beads.

The book is a collection of scholarly, well-researched, and well-presented articles on stone bead archaeology in South Asia and its diffusion into other parts of the world. Most of the contributions are amplified with technical data regarding chemical analysis of stones, morphology of drills, micro abrasions and use patterns that reinforce theories and hypotheses about catchment areas, as well as spheres of circulation for raw materials and technology.

The significance of bead studies in particular and artefact research in general for understanding social and economic organization in archaic cultures is underlined in most of the papers. Kenoyer and others also examine the religious and ideological implications of beads for the social groups that produced them and also for those who consumed them: as 'signs' of hierarchy, transactions, and negotiations within the group and also with communities outside. The scholarly text, illustrated with appropriate images and tables, and technical analysis, is a significant contribution to object-based archaeological data on South and Southeast Asian pre- and proto-historical periods and is a welcome addition both for the serious scholar and the inquisitive student.

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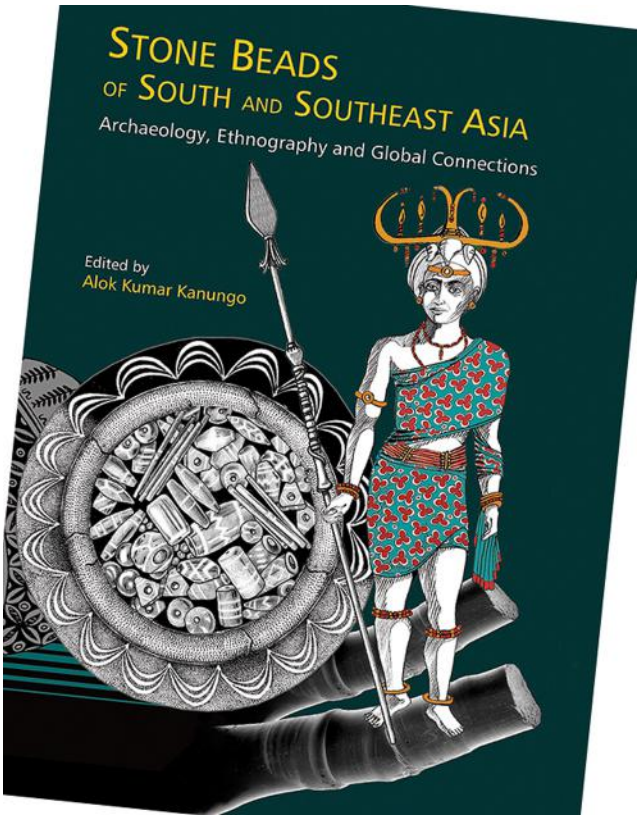
Stone Beads of South and Southeast Asia: Archaeology, Ethnography and Global Connections.

Alok Kumar Kanungo (ed.). Aryan Books International, Pooja Apartments, 4B, Ansari Road, New Delhi-110002; aryanbooks@gmail.com. 2017. xvi + 444 pp., 358 color and B&W figs. ISBN: 978-81-7305-585-0 (hb); 978-81-7305-587-4 (pb). US $124.99 (hard cover).

This large-format volume contains the papers presented during the "Short Term Course cum Workshop on History, Science & Technology of Stone Beads" held

at the Archaeological Sciences Centre, Indian Institute of Technology Gandhinagar, Ahmadabad, Gujarat, India, in August of 2015. The aim of the five-day course was to inform the attendees about the history, technology, and products of the South Asian stone bead industry, as well as how to properly record, analyze, and interpret the archaeological material.



The book is divided into four sections. The first of these – **Beads: Importance and Literature** – contains four papers. The first of these, "Small Find, Immense Impact: Importance of Bead Studies" by Kishor K. Basa, discusses the advances made in bead research over the years and stresses its importance in understanding past cultures. In "Jewels and Jewellery in Early Indian Archaeology and Literature," R.S. Bisht relates the history of bead jewelry in India, emphasizing the Harappan Culture, using both literary and archaeological sources. He also discusses the various stones and other materials utilized in bead production.

References to "Beads and Ornaments in Early Tamizh Texts" from southern India are discussed by V. Selvakumar. In "Ratnattin Tiruvābharanangal (Sacred Gemstone Ornaments) in the Inscriptions of Brihatīswarā Temple, Tañcāvūr," he presents a detailed statistical report on the ornaments donated to the various deities as recorded in ancient temple engravings.

Beads: History, Methodology and Ethnoarchaeology is represented by six papers. "Geological Aspects of Raw Materials for Stone Beads," by Ravi Prasad, V.N. Prabhakar, and Vikrant Jain, aims to assess the geological and chemical properties of the various types of stone used to manufacture beads at Dholavira, a Harappan Civilization site in Gujarat state, India, with an eye to determining their origins. It also delves into how the different stones are affected by physical and chemical weathering.

In "History of Stone Beads and Drilling: South Asia," Jonathan Mark Kenoyer provides an excellent overview of stone beadmaking with emphasis on the drilling aspect. In "Stone Beads of the Indus Tradition: New Perspectives on Harappan Bead Typology, Technology and Documentation," he presents a new approach to the identification, documentation, and interpretation of Harappan stone beads, and itemizes what information needs to be documented and how.

"Living Tradition: Stone Bead Production in Khambhat – An Ethnoarchaeological Approach," by Kuldeep K. Bhan, Jonathan Mark Kenoyer, and Massimo Vidale, documents the existing traditional Khambhat stone-bead industry – the largest in the world – which is on the threshold of being transformed by modern technology and socio-economic change. In "Transitions in the Stone Beadmaking at Khambhat: An Ethnohistorical Survey," Alok Kumar Kanungo reports on the changes that have occurred in the Khambat bead industry, with emphasis on the source of the raw material, technology, organization, and commerce.

The final paper in the group is "Stone Bead Users – Symbolic Value and Trade: The Nagas," by Manabu Koiso, Hitoshi Endo, and Ayumu Konasukawa. It provides ethnographic details about the beads and necklaces used by the Nagas of northeastern India.

Eight papers comprise the third group: **Beads: Case Studies from South Asia**. "Early Evidence of Beadmaking at Mehrgarh, Pakistan: A Tribute to the Scientific Curiosity of Catherine and Jean-Francois Jarrige," by Massimo Vidale, Maurizio Mariottini, Giancarlo Sidoti, and Muhammad Zahir, deals with the archaeological material recovered from a Chalcolithic craft center. The emphasis is on lapis lazuli and chert drill heads.

In "Stone Bead Production through the Ages in Gujarat," Kuldeep K. Bhan stresses the Harappan period. More details about the industry are provided in "Early Harappan Bead Production in Gujarat: Technology, Adaptation and Contacts," by P. Ajithprasad and Marco Madella, including information about the sources of the raw material, drilling techniques, and trade.

"Documentation and Analysis of Stone Drills from Dholavira," by V.N. Prabhakar, reports on the microscopic

and statistical analysis of the large number of Ernestite drills recovered from the Harappan site of Dholavira in Gujarat, India. This has led to a better understanding of the different drill types and sub-types, and their attributes.

Rabindra Kumar Mohanty's paper on "Antiquity of Semi-precious Stone Beads from Deccan" covers the period from the earliest beadmakers to the Early Historic Period and encompasses most of central and southern India. In "South Indian Stones Beads: Archaeological, Textual and Ethnographic Approach to Traditional Gemstone Industry," K. Rajan uses information gathered from present-day gem cutters in Kangayam, central India, to better understand the technology used to produce beads recovered from excavations at nearby Early-Historic Kodumanal.

"Early Historic Stone Beads from Ahichhatra," by Bhuvan Vikrama, concentrates on the beads recovered from the Painted Grey Ware levels at this site in northern India, while "Ancient Stone Beads of Southeast Asia and Indian Connection," by Bunchar Pongpanich, briefly surveys beads recovered primarily from Thailand and discusses the bead trade with India.

The final section – **Beads: Scientific Studies** – contains three articles. "Scientific Analyses and Stone Beads," by Laure Dussubieux and Mark Golitko, explains the different analytical methods used to determine the chemical composition of stone beads, using lapis lazuli from sites around the world as a case study. In "Non-Destructive Identification and Characterization of Ancient Beads: A Case Study from Harappa," Randall Law reveals how X-ray diffraction (XRD) analysis of a small red bead believed to be glass proved it was actually made from indurated hematitic kaolinite. Finally, "Using SEM to Study Stone Bead Technology," by Jonathan Mark Kenoyer, notes how useful a stereoscopic scanning electron microscope is in properly identifying bead manufacturing techniques, colorants, and raw materials.

In sum, *Stone Beads of South and Southeast Asia* contains a wealth of information on the South Asian stone-bead industry, from the earliest times to the present day. The last three papers discuss technology that has greatly helped researchers to identify and source bead raw materials, as well as uncover details concerning beadmaking tools and techniques. The book is a welcome addition to the literature.

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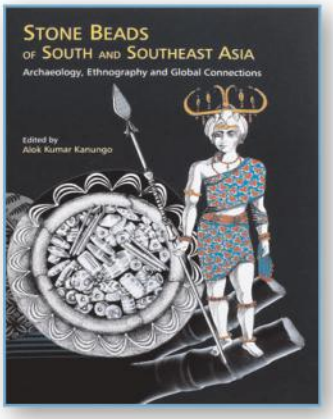

Alok Kumar Kanungo, Editor. 2017. *Stone Beads of South and Southeast Asia: Archaeology, Ethnography and Global Connections.* Indian Institute of Technology Gandinagar and Aryan Books International: 444 pp., hardcover $66.00.

This large format, well-printed and heavily illustrated volume is the result of a stone bead workshop held in 2015, organized by the editor. While most of the participants were from the Indian subcontinent, archaeologists from other Asian countries, Europe and the United States also were present, totaling ten countries and eighty attendees. Archaeological, ethnographic studies and the increasing importance of trade in antiquity of stone ornaments were addressed, with some degree of overlap among the articles. Because of the conservative nature of stone bead manufacturing, which is still ongoing in South Asia, it is possible to effectively compare ancient with historic and current production processes. With nondestructive elemental and isotopic analyses being extended to stone beads, this has lead to widespread application of these methods to provenance raw stone sources.

The various authors cover from Neolithic Mehrgarh to present-day Khambhat, as well as stone beads used by the Nagas. Having written on various Naga tribes, I find this chapter short on content. Several chapters cover stone beads in historic literature. The most informative chapters are on processing of raw materials, production techniques, especially drilling, and ethnoarchaeological studies. Kenoyer's chapter on the history of stone beads in South Asia serves as a good summary. The ample and usually well-photographed images provide excellent identification for most south and southeast Asian stone beads, as well as the source stones and minerals for these beads. Current techniques for compositional analyses of stones and methods of studying drilling processes will inform both scientists and bead enthusiasts on how so much more information can now be extracted from beads.

Anyone working with stone beads will benefit from this compilation, especially archaeologists and serious students of beads. University and institutional libraries need to have this volume, which is a good value for the price.

Robert K. Liu

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