

## **The South Asia Archaeological Site Database and Gazetteer**

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As part of the effort to facilitate the sharing of information between the various individuals and institutions participating in the Archaeological Research and Conservation Program, India/Pakistan, two complementary repositories of archaeological site data were created using widely available computer software programs. The program FileMaker was used to build an extensive and detailed informational database of archaeological sites in Pakistan and India. In tandem with this, an interactive gazetteer of the same archaeological sites was created in the navigable global mapping program Google Earth. To date, nearly 3000 archaeological sites across South Asia have been incorporated into the database and gazetteer.

### ***FileMaker Pro site database***

FileMaker Pro is a program that can be employed to assemble highly varied and disparate types of information into a single searchable database. When relationships between the different data “fields” are defined by the programmer, it becomes possible to conduct simultaneous queries across of multiple levels of information. For example, using this database, a scholar in India studying ancient metallurgy might ask for a list of all “Early Harappan Period sites in Sindh, Pakistan where copper objects have been found.” Or a student of Early Historic Period archaeology in Pakistan could get a comprehensive list of all “Buddhist sites excavated in Gujarat, India at which both coin hoards and relic caskets have been recovered.” In this way, such a database becomes not only an important repository of information but also a powerful research tool. FileMaker Pro is already used by institutions in Pakistan and India (including the Harappa Archaeological Research Project and the Maharaja Sayajirao University of Baroda) to document artifacts from their excavations and/or museum collections. The database created by the ARCPIP is the first attempt to collate large amounts of archaeological site data from multiple institutions in both countries.

When viewed in the browse option of FileMaker Pro, the ARCPIP South Asia Archaeological Site Database is presented as a series of tabbed windows not unlike a web browser (Figure 1 A to F). The initial opening tab displays an archaeological site’s “Location” data and includes its geographic coordinates, a note on the accuracy of those coordinates, its political geography (Country, State/Province, District, Tehsil/Taluka), and, when the database is connected to the internet, an inset window with site’s location shown on a Google Map. On the next tab a site’s established “Chronology” and/or reported cultural-historical affiliation(s) is listed. When available, “C14” or radiocarbon data for sites are provided on the tab that follows. Major descriptive “Features” of an archaeological site are listed on the next tab and include general site type (habitation, ritual, burial, rock art, quarry, etc.), its approximate dimensions/area, and whether it has major features such as perimeter walls, gateways, a cemetery area, etc. The tab after that contains a long list of “Artifacts” that are checked or unchecked in order to indicate the presence or absence of such objects at the site. The next tab contains a list of the academic “References” (books and scholarly journals) pertaining to the site. The final tab contains a list of

other related “Media” including links to websites, news articles, popular press items, and/or documentary video.

After nearly two years since its initial creation for the ARCP/IP, the South Asia Archaeological Site database now has over 3000 entries. However, it remains a work in progress. Given the nature of archaeological research in South Asia – where new sites are discovered every field season, chronologies are frequently revised and archaeological features and materials are constantly reevaluated and reinterpreted – this was entirely expected. In fact, FileMaker Pro was selected for this project specifically because of its ease of updating and interface design malleability. Although it is meant to be a centralized repository of diverse archaeological data from across India and Pakistan, it is anticipated that ARCP/IP participants from both countries might eventually wish to modify the database to suit their own particular research needs.

### ***Google Earth site gazetteer***

In tandem with the FileMaker Pro database, an interactive gazetteer of South Asian archaeological sites was developed in the virtual globe and mapping program ***Google Earth***. Nearly 3000 archaeological sites in Pakistan and India have been mapped upon satellite imagery by their published (and available unpublished) geographic coordinates. The starting point for the gazetteer (as well as the database) was the *Gazetteer of Sites of the Indus Age* published in 1999 by the late Prof. Gregory L. Possehl, Curator of the Asian Section, University of Pennsylvania Museum of Archaeology and Anthropology. The locational data in Possehl’s print gazetteer, which covered approximately 2000 sites but was compiled from data gathered in the pre-GPS era, is largely inaccurate. For the Google Earth gazetteer project, the geographic coordinates for hundreds sites were painstakingly revised with reference to topographic sheets and recently published GPS data. Hundreds more were updated with unpublished GPS data gathered during the Gujarat re-survey project conducted jointly by the Maharaja Sayajirao University of Baroda and the Research Institute of Humanity and Nature of Kyoto, Japan. Many additional sites discovered during that project were added to the gazetteer. New, accurately plotted sites were likewise added from survey data supplied by other ARCP/IP participants as well as non-affiliated scholars working in both Pakistan and India (a list of these institutions and individuals is provided below and in the “Acknowledgements” icon pop-up window, which has been placed in the Arabian Sea). Although there remain many sites that still need to be ground-truthed, these are noted in the gazetteer as “Location Approximate.”

When the gazetteer file is initially opened in Google Earth, users will see the distribution of the archaeological sites from a vantage point high above northwestern South Asia (Figure 2). By manipulating the mouse, the keyboard, and/or the buttons on the interface window, users can zoom in and out of the landscape, examining in more detail specific regions and individual sites. When icons for individual sites are selected, pop-ups window will appear that display site data, academic references and, where available, photographs and links to internet content (Figure 3).

To the left of the interface window is a sidebar (Figure 3) displaying the folders in which the gazetteer data are located. The main folder, called “Site gazetteer,” contains various sub-folders

where sites are separated according to their chronological phase and/or culture-historical affiliation. By checking or unchecking the sub-folders, the user can display or remove certain sets of sites from the map. Currently, site data specifically gathered from ARCPIP participants are kept in a separate folder called “ARCPIP added” so they can be easily selected and examined by reviewers of this report. These are eventually to be incorporated into the main folder by site period/affiliation. A third folder called “Resource gazetteer” is also included. It shows the locations of several thousand stone and metal sources that were potentially exploited by the ancient peoples of the region.

The Google Earth gazetteer was created primarily to be a visual interface for sites in the FileMaker Pro database. It can be used as a tool for making generalized site maps, for broadly viewing site distribution, and, using the program’s linear and area measurement functions, for making basic calculations of spatial relationships between or at sites. However, in order to conduct detailed spatial analyses more powerful GIS programs are recommended.

***Access to and distribution of the database and gazetteer***

The FileMaker Pro database and Google Earth gazetteer were presented to the ARCPIP participants attending the 43rd Conference on South Asia held at the University of Wisconsin-Madison on October 17th, 2014. The consensus among the attendees was that, at the present time, they should not be released to the general public as they contain a great deal of as yet unpublished data. The various ARCPIP participants will be provided with copies of the database and gazetteer, which they can share with colleagues and collaborators of their own choosing.

***Institutions and individuals that have provided survey data for the gazetteer and database***

Department of Archaeology and Ancient History, MS University Baroda (ARCPIP Partner)

Research Institute of Humanity and Nature, Kyoto, Japan

Department of Archaeology, Hazara University-Mansehra (ARCPIP Partner)

Department of Archaeology, Shah Abdul Latif University-Khairpur (ARCPIP supported)

Department of Archaeology and Museums, Government of Pakistan

Dr. Asma Ibrahim (Project Director, Archaeological Survey of Sindh) (ARCPIP supported)

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Dr. Paolo Biagi (University of Venice)

Dr. Vivek Dangi (Department of History, Jat College, Rohtak)

Figure 1. FileMaker Pro South Asia Archaeological Site Database tab-windows

South Asia Archaeological Site Database

Harappa

Site name: Harappa Alternate name: \_\_\_\_\_

Location Chronology C14 Features Artifacts References Media

Latitude: 30° 37' 42.75" N Country: Pakistan

Longitude: 72° 51' 56.63" E State/Province: Punjab

Coordinate accuracy: \_\_\_\_\_ District: Sahiwal

GPS point: \_\_\_\_\_ Tehsil/Taluka: \_\_\_\_\_

Map Sat Ter

A. Location tab

South Asia Archaeological Site Database

Harappa

Site name: Harappa Alternate name: \_\_\_\_\_

Location Chronology C14 Features Artifacts References Media

Established chronological/cultural phases or diagnostic materials present

from: Meadow, R.H. and J.M. Kenoyer (2001) Recent Discoveries and Highlights from Excavations at Harappa: 1990-2000. *Indo-Iranian Journal of Indian Archaeological Studies* 22:19-36.

Period 1A/B - Early Harappan / Ravi Phase (c. 3300-2800 BC)

Period 2 - Early Harappan / Kot Diji Phase (c. 2800-2600 BC)

Period 3A - Harappan Phase (c.2600-2450 BC)

Period 3B - Harappan Phase (c. 2450-2200 BC)

Period 3C - Harappan Phase (c. 2200-1900 BC)

Period 4 - Harappan/Late Harappan Transitional (1900-?1800? BC)

Period 5 - Late Harappan / Cemetery H (1800?-1300 BC)

B Chronology tab

South Asia Archaeological Site Database

Harappa

Site name: Harappa Alternate name: \_\_\_\_\_

Location Chronology C14 Features Artifacts References Media

Site Type: Habitation

Major Features:

Perimeter Walls

Gateways

Cemetery Area

Approximate Dimensions:

1200 x 1200 m

Approximate Area: 150 ha

Approximate Height: \_\_\_\_\_

C. Features tab

South Asia Archaeological Site Database

Harappa

Site name: Harappa Alternate name: \_\_\_\_\_

Location Chronology C14 Features Artifacts References Media

TIC FIGURINE - HUMAN

TIC CART

TIC WHEEL

TIC TOP/LID

TIC MISC OBJ.

INSCRIBED SHERD

\*SCALE PAN

\*CARVED POTTERY/ ARCH. FRAG

TIC BED TABLE

TIC PENDANT/BEAD WHORL

TIC SOLID BALL

TIC GAMING PIECE, CONICAL OBJ.

TIC POINTED CONE

TIC RATTLE

TIC DISC

TIC CASK, COMPLETE

TIC POTATOE

BEAD FINISHED-STEATITE

AGATE, JASPER\*

PASTE

OTHER, Lapis

BEAD UNFINISH-STEATITE

AGATE, JASPER\*

LAPIS / OTHER\*

SANGI CHURIK (agate, lapis etc.)

AMULET PENDANT STEATITE

AGATE, JASPER\*

PASTE

AGATE, etc. BLOCKLET

AGATE, etc. FLAKE

AGATE, etc. RODULE

GOLD BEAD

TRUNCATED CONICAL AMULET

UNFINISHED AMULET

COPPER ROD WIRE/PIN

COPPER PRILL

COPPER MIRROR

COPPER SHEET BLADE

COPPER TABLET

COPPER ARROW HEAD

COPPER DISC

SHELL BANGLE

SHELL BEAD

SHELL ORNAMENT

SHELL INLAY

SHELL OTHER

SHELL BANGLE MANUFACTURE

SHELL BEAD MANUFACTURE

D. Artifacts tab

South Asia Archaeological Site Database

Harappa

Site name: Harappa Alternate name: \_\_\_\_\_

Location Chronology C14 Features Artifacts References Media

Vats, M. S. (1940) *Excavations at Harappa*. Delhi, Government of India Press.

Meadow, R. H. and J. M. Kenoyer (1993). "Excavation at Harappa 1992 & 1993." *Pakistan Archaeology* 28: 55-107.

Meadow, R. H. and J.M. Kenoyer (1994). Harappa excavations 1993: the city walls and inscribed materials. *South Asian Archaeology 1993*, A. Parpola and P. Koskikallio. Helsinki, Suomalainen Tiedekatemia. Vol. 2: 451-470.

Meadow, R. H. and J. M. Kenoyer (1994). Harappa excavations 1993: the city walls and inscribed materials. *South Asian Archaeology 1993*, A. Parpola and P. Koskikallio. Helsinki, Suomalainen Tiedekatemia. Vol. 2: 451-470.

Meadow, R. H. and J. M. Kenoyer (1997). Excavations at Harappa 1994-1995: New perspectives on the Indus script, craft activities and city organization. *South Asian Archaeology 1995*, B. Allchin and F. R. Allchin. New Delhi, Oxford & IBH: 139-172.

Kenoyer, J. M. and R. H. Meadow (1997). "Excavations at Harappa 1996-97: A brief overview." *Punjab Journal of Archaeology and History* 1: 61-73.

Kenoyer, J. M. and R. H. Meadow (2000). The Ravi Phase: A New Cultural Manifestation at Harappa. *South Asian Archaeology 1997*, M. Taddei and G. de Marco. Rome, ISIAO: 55-76.

E. References tab

South Asia Archaeological Site Database

Harappa

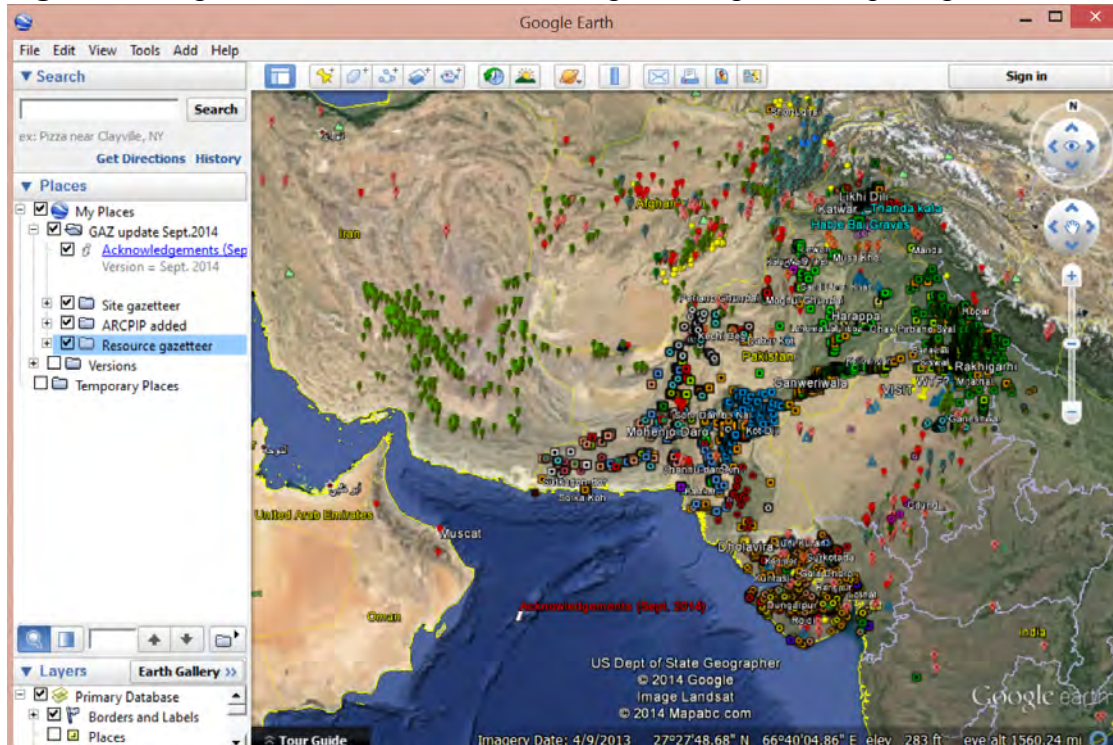
Site name: Harappa Alternate name: \_\_\_\_\_

Location Chronology C14 Features Artifacts References Media

Website: www.harappa.com

F. Media tab

**Figure 2.** Google Earth South Asian archaeological site gazetteer opening view



**Figure 3.** Google Earth site gazetteer pop-up window (center) and navigation sidebar (left)

