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Institute of Archaeology & the Horn
Archaeological Museum Newsletter

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Archaeological Museum

Winter 2021

The Institute of Archaeology & Siegfried H. Horn Museum Newsletter Volume 42.1

Robert D. Bates

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The Institute of ARCHAEOLOGY Siegfried H. Horn Museum



New iPad Database

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The Covid-19 pandemic has had a negative impact on archaeological research in Transjordan. With travel restrictions in place, the Institute of Archaeology was unable to send its team into the field in 2020. They were also restricted from traveling to the Annual Meeting of the *American Society of Overseas Research (ASOR)* which cancelled all in-person meetings in favor of a remote option held from November 12-14, and 19-21, 2020. Although unable to excavate in Jordan, scholars were given the opportunity to pre-record a 20 min presentation of their most recent research. The recordings were posted for viewing in advance and then participants met for a one-hour discussion with others presenting on similar topics. Robert D. Bates, assistant director of Archaeological Publications presented his work developing archaeological databases in a paper entitled, "Database Development for Archaeological Excavations: A FileMaker Solution" during the Digital History and Archaeology session at *ASOR*.

Archaeological excavations collect vast amounts of information and produce a lot of data. From artifacts, pottery, and bones, to notes, reports and photographs. Sometimes it takes many years to correlate this information, catalog the artifacts and write a report or volume that synthesizes the data and presents a clear picture of what was found. In some cases, the work is never completed by the original archaeologist and it falls to others to finish, if it is ever finished at all. Part of the reason for this delay is the amount of time and effort that is needed to sort through all the data that was collected. Cross referencing these discoveries between stacks of field notes, articles and books make the process even more laborious.

One of the most effective ways to organize and catalog the wide variety of data collected on an archaeological excavation is through an integrated relational database system. Databases allow

(cont'd on p. 2)

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NEWSLETTER

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Paul Ray Shows Some New iPad Functions to Michael Orellana.

users to collect and access vast amounts of data, organize information into categories, sort that information and create reports all with the click of a button. However, although databases are used extensively in business applications, there are only a handful of projects working in Transjordan using an integrated database to manage their artifacts, pottery, and field notes. Most excavation projects have some type of objects database, but stratigraphic data is usually stored on spreadsheets that are not connected to other data from the excavation. The Institute of Archaeology has long been a pioneer and innovator in database development for archaeological excavations from its inception.

In 1971, Øystein LaBianca, director of the Tall Hisban Cultural Heritage project, developed the earliest archaeological database to help with his study of faunal remains at Tall Hisban. He noticed that during the early excavation seasons large numbers of bones were being discarded without being studied in any detail. He created a standardized format for recording animal bones and other faunal remains and computerized them using a punch card system. These punch cards were fed into a mainframe computer to generate reports showing “the changes over time in the composition of the animals” which led to a clear understanding of the story of changing foodways at the site. The success of this project helped standardize the recording methods for soil loci and artifact recovery, leading to the development of Madaba Plains Dig Manual by Larry Herr, Gary Christopherson, Randall Younker and David Merling.

In the late-1990s Karen Borstad developed a new and more sophisticated database using the recently introduced Microsoft Access software for personal computers. Initially designed to keep track of artifacts discovered in the field, and print object reports for the Department of Antiquities, Borstad expanded the database to include locus data. “Her goal was to create reports that transformed data into information.” The

Data Entry and Information Retrieval (DEIR) system was later offered by the Institute of Archaeology for free to other projects interested in keeping track of their fieldwork data. Borstadt customized the *DEIR* system for each project and wrote a user manual to accompany the software. However, by the mid-2000s Microsoft dropped its support for other platforms like Macintosh, and did not continue to update or improve the software beyond its basic architecture. Currently, Microsoft Access is only available for PC computers, and is incompatible with newer technologies like iOS devices, smartphones and tablets

With the growing number of Macintosh computer users and iOS devices, a more mobile database solution was needed to meet the changing technology. In 2011, Robert Bates began developing a new database system designed to take advantage of mobile devices that could be taken into the field to record locus data. Based on the MPP Dig Manual, the new *MPP FileMaker Database (MPPFMD)* adopted a user-friendly digital interface to replace the traditional pen and paper recording method. Although laptop computers had been used on excavations in the past, their sensitivity to dust and susceptibility to damage made them less likely to be used to record data in the field. However, the recently introduced iPhone and iPad with their completely sealed cases provided an opportunity to transition data recording from a strictly pen and paper format to a digitally-based recording system.

FileMaker Pro was chosen for the new database platform because it provided a flexible means of operating on an excavation using multiple types of devices as needed. As a standalone application it can be used on the PC, Mac, iPhone, iPad as well as on Android devices. As a server-based application, it can be accessed through the internet using WebDirect. It also provided a unified security model using authenticated passwords, specially assigned privileged sets and a two-way AES-256 encryption, with data field CryptosEncryptBase64.

As an off-the-shelf application, FileMaker Pro provided many additional benefits. First, since the Institute of Archaeology had been using the software since 2006 to manage the Museum artifacts, many of the staff were already familiar with the program. Initially the files were hosted on an in-house server that was then transferred to the Andrews University server in 2010. Staff are issued personalized encrypted passwords which allow them to access the database. Second, the FileMaker Server/FileMaker Pro software is relatively inexpensive with its educational discount, especially when compared to other database platforms, and the iPad version, FileMaker Go, is free. Students and staff can purchase their own copies, or they may be granted use of one of the Institute of Archaeology’s licenses for official access. Third, its cross-platform compatibility allows the stand-alone files to be shared between computers and files on the server, and can be accessed by anyone granted permission through an encrypted personalized password.

Although currently the FileMaker Server is restricted to on-campus use only, the Institute of Archaeology is working with the IT department to make the MPP FileMaker Database available through the internet. Soon an archaeologist with an iPad can photograph and input data on an excavation in Jordan or anywhere in the world, which can then be viewed in real-time at the Institute Archaeology or anywhere else, with an internet connection. Researchers will no longer be restricted to being physically present at Andrews University to analyze data collected on an excavation, but with an encrypted password can access their work at home.

Beginning in 2015, the Institute of Archaeology began transitioning from a strictly pen/paper recording method to a digital platform using FileMaker Pro. Individual iPads were assigned to each square, and the MPP FileMaker Database was installed along with other apps to aid the process. Archaeologists record data, write notes and take photos using these devices. The user-friendly interface not

only stores locus data, but also keeps track of pottery pails, top plans, artifacts, balk drawings, and the staff working in the square. Every step of the excavation process is recorded in the database and each locus can be printed out in the same format as the original paper-based MPP Locus Sheets to maintain continuity.

Two new features have been recently added. Using a customized input panel, archaeologists can enter pottery information quickly and easily without typing out the pottery reading. The data is automatically tabulated, and the results are displayed in a bar graph or pie chart on the Home Page. Users can view statistics for the pottery of the entire square or by individual loci. The pottery results can also be sorted by historical

periods as well. Archaeologists unfamiliar with the excavation process or the database can get online help. Although most people are familiar with iOS and Android devices, a built-in help system has been created to familiarize new staff with how to use its many features. The Help Me button includes a guide on how to use the iPad database, a Dig manual for reference and a video tutorials button. If the iPad has a WiFi connection to the internet, users can watch You Tube video tutorials on how to use the database.

The future of archaeology is digital, and the Institute of Archaeology is working to utilize new technologies to make their discoveries more accessible.
(Robert D. Bates)



Robert Bates filming ASOR Presentation.

AL-MAKTABA
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RANDOM SURVEY

New Burials Discovered:

In Roman times, cemeteries lined the roads to their cities. The Vatican now sits on a hill where the Necropolis of Santa Rosa was located, along the *Via Triumphalis*. Recent excavations have uncovered more than 250 such burials, dating between the 1st and 4th centuries. Tomb types represent both the rich and poor. Economic movement is sometimes memorialized on tombs, with engraved inscriptions providing the details of their success, such as on two altars dedicated to freed slaves from the house of Caesar.

New Temple Discovered in Egypt:

Archaeologists have recently discovered the ruins of a Temple at Abusir from the time of Ramses II. The temple is over 2632 m in size. Uncovered thus far are its mud brick foundation, forecourt, hypostyle hall, and a ramp leading to the sanctuary. Reliefs depicting scenes of the solar gods Amun, Ra, and Nekhbet have also been discovered.

To discover more about archaeology, the Institute, and the Museum, contact us at:

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Gateway Found in Iran:

Excavations at Tall-e-Ajori, on the outskirts of Persepolis, have uncovered part of a 30 x 40 m gateway, measuring ca. 12 m high. It has a corridor in the center, in the form of a rectangular room, measuring 8 x 12 m. Historically, Cyrus ordered the construction of this gateway, and Cambyses II inaugurated its opening. Darius I began building the city's immense terrace in ca. 518 BC, upon which successive kings erected a series of palatial buildings, including the Apadana (Throne Hall). Persepolis was the seat of the government during the Persian Empire.

Gladiator Arena Found:

Archaeologists have discovered the remains of a Roman-period arena in the ancient city of Mastaura, in Turkey, where up to 20,000 spectators once watched gladiator matches and fights with wild animals. The arena dates to ca. AD 200, during the Severan Dynasty, at a time when Rome helped the city to grow economically. A number of coins dating to this period have been found. Excavators have also unearthed the outer arches, several rows of seating, and specialized rooms.

Mosaics Found in Israel:

Two mosaics have recently been found in the Late Roman-period Synagogue at the site of Huqoq, in Lower Galilee. The first depicts the four beasts of Daniel 7. The second mosaic has three horizontal registers depicting the episode of Elim, in Exod 15:27.

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