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DIYALA OBJECTS PROJECT

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The Oriental Institute Diyala Expedition of the 1930s carried out research of ex-
traordinary vision and ambition. At a time when the archaeology of the Near East
was still in its formative stages, the Diyala Expedition set out to establish for the
first time the basic history and material culture of early Mesopotamia. Scholars then
had only the haziest idea of which material objects were markers of what historical
periods; the best they could do was to identify things as vaguely Sumerian or
Babylonian or Assyrian. Under the leadership of Henri Frankfort, the Diyala team
excavated four sites in the Diyala basin, an area to the northeast of Baghdad. The
results of eight seasons of work were extraordinary. The patterns of material culture
and history laid out by the team remain, with many changes in detail, an essential
framework not just for the Diyala area, but for all of Mesopotamia from 3200 to
1800 BC.

Archaeological excavations are of little value if the results are not published.
The ambitious plan to produce eleven volumes of final monographs was realized to
a remarkable degree, despite the interruptions caused by World War II. Frankfort
completed four of the volumes before he died prematurely in 1954. Pinhas
Delougaz, Seton Lloyd, and others, working through the late 1960s, produced one
volume on pottery, two on different sets of temples, and one on private houses and
graves. In 1990, Thorkild Jacobsen, then in his 80s, finished the last of the architec-
tural volumes on Old Babylonian public buildings. In fact, all but two of the books
have been published: *Miscellaneous Objects from the Diyala Region*, the last of the
basic data presentations, and a summary volume entitled *Four Ancient Towns in the
Diyala Region*, which was meant to appear after all of the other volumes were done.

With a grant from the National Endowment for the Humanities, we have been
working for almost three years to produce the *Miscellaneous Objects* volume. Al-
though the title might indicate that the objects are of trivial importance, this material
is actually the key to understanding fully all that has been presented in the other vol-
umes. There are more than 12,000 objects involved, even when we exclude the pot-
tery, cylinder seals, and sculptures that are already published. This volume deals
with both extraordinary art objects (baked clay plaques with fresh and unusual mo-
tifs, clay figurines, stamp seals, amulets, clay bits impressed with stamp seals, and
superb cylinder seals), all of the jewelry (precious and semiprecious stones, gold,
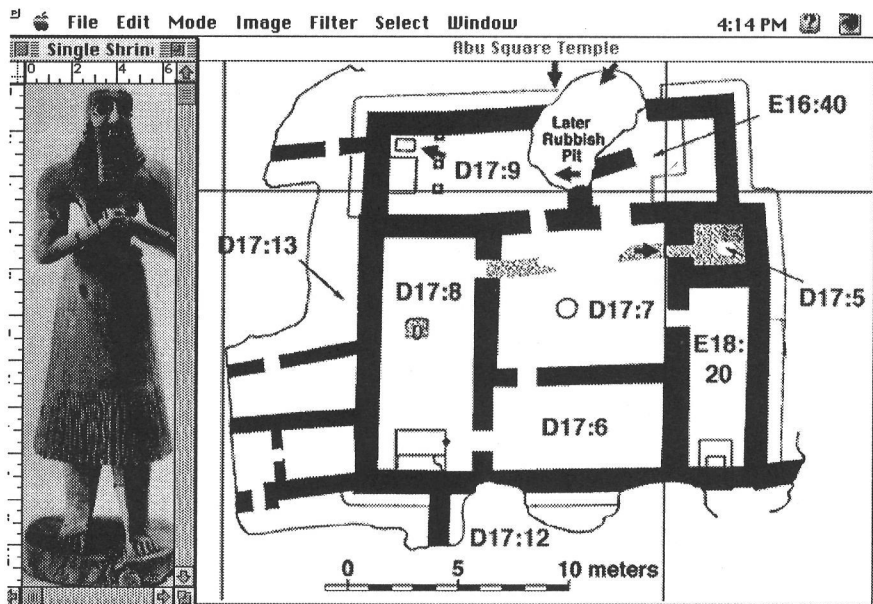
A sample of the Diyala CD-ROM publication

silver, etc.), amulets, tools, weapons, stone vessels, and odd bits and pieces that are truly miscellaneous.

In many ways, the "miscellaneous" objects are the most critical items when one is trying to find out the function of a particular room or building. Being often the most utilitarian kind of objects, these items would be discarded when broken. Thus, along with fragments of pottery, the miscellaneous items are more likely to be found where they were last used (cylinder seals, being beautiful and often of semiprecious stone, would be kept as heirlooms or as jewelry long after their use as an authenticating device). Analysis of objects found together often can give us new insights into the everyday life of ancient people, but it can also tell us something about domestic arrangements, ritual, magic, and even healing practices that are only hinted at in the ancient written sources.

The project uses cutting-edge techniques to deal with old material. We are working on material that has been out of the ground for more than fifty years, and we are relating it to the previously produced volumes, but we are making a radical departure by putting all of the information into a computer database. For almost three years now, the project staff, including student assistants and three volunteers, have been using computers, scanners, a CD-ROM recorder, and other equipment to enter not only the information on each object (its type, size, shape, and findspot) but also a full description with a photograph and/or a drawing.

During the past year, our efforts have been directed toward making sure the electronic catalog is accurate, while using it to organize and analyze two specific categories of objects: stone vessels and objects found in one building complex, the Shu-Sin Temple and the Palace of the Rulers at Eshnunna.

Two of the volunteers, Joyce Weil and Carole Yoshida, have used a flat-bed scanner to enter into the database all of the available photographs of objects here at

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the Oriental Institute. Items represented not by photographs, but by negatives, will now be scanned in by using new technology that the University has acquired in the past year. With a negative scanner, the computer can be instructed to reverse the image and deliver a positive, photograph-like result on the screen. Images may be enhanced or blemishes on the negative may be eliminated, much as in traditional photographic processing.

The scanning of photographs and drawings of plans and objects allows us to use those storage and retrieval features for which computers are designed. Thus, we can rapidly find all of the images of any object, even when it is shown on several photographs. We can also keep track of various images from different angles of a given item. Because the photograph catalog exists as part of a much larger database that has information on findspot, material, dimensions, references to similar objects elsewhere, previous publication history, and present location of the object with museum registration numbers, we can link the images with the verbal information in a number of ways.

Working with both the field records, such as object registers and cards for individual objects, and the previously published Diyala reports, we have now entered all of the unpublished miscellaneous objects, but we have also included those items that have already been published. The reason for entering the previously published items is to make the database as complete as possible in order to allow the user of the final product to place the miscellaneous objects in context with all of the other items found in a given locus. It is the association of objects in a context that allows refinements of dating and attempts to determine the function of a room or space. If we restricted the database only to the unpublished items, a researcher would find it cumbersome and ineffective to constantly refer back and forth between computer and books. It is better that we, who know the data and the findspots best, enter all of the relevant information as accurately as we can so that the future user will have an easier job of research.

In the study of objects, a scholar often visits a museum to look at them in minute detail. Thus, we have to tie in, as much as possible, our database to the records of the museums in which the objects now reside. Helaine Staver, our third volunteer, has been undertaking the arduous, painstaking job of matching the information on Diyala objects in the Oriental Institute's electronic database with our own.

Insofar as it is possible, we are also scanning into the computers all of the relevant plans and even some photographs of the buildings in which the objects were found. When completed, the database will make it possible for someone to "click" with a computer mouse on a map of a site, get a plan of a particular building, then "click" on a particular room to be able to see a picture of the room and a list of all of the objects found in it, including full descriptions, drawings, and photographs. We include here some examples of a "screen" from a demonstration of how the final product might work. Anyone wishing to view the demonstration may do so by setting up an appointment with the project staff in the Oriental Institute.

As noted above, we have been testing the database by analyzing one category of objects, the stone vessels. These objects are usually plain but can be elaborately carved with figures. In sorting the vessels by type, findspot, level, etc., we have found that the database works quite well, but we are still finding inconsistencies in our own entries (for example, in one place a shape will be called a bowl and in an-

other a cup) or between our information and that in one of the publications. These inconsistencies cause us not only to regularize our database, but also sometimes lead to interesting questions on the interpretation made by the original excavators on a specific object.

A more telling demonstration of the usefulness of the database is the research of one of the student assistants, Clemens Reichel, who is reworking the Shu-Sin Temple and the Palace of the Rulers as his Ph.D. dissertation. This complex of buildings, the subject of the earliest of the Diyala publications, was created as a temple to the divine Ur III king, Shu Sin (formerly read as Gimilsin, ca. 2170 BC), attached to an administrative palace of the province of Eshnunna. Very soon, Eshnunna broke away from the Ur empire and the local kings turned the temple into just a secular wing of the palace. The entire complex underwent several architectural changes during the next fifty years. In all of the levels of the complex, hundreds of objects were found, including cylinder seal impressions on clay. In addition, the excavators recovered more than 1,200 cuneiform tablets from the entire sequence. Reichel is reexamining the architectural changes, resorting the levels, and viewing all of the objects in their original contexts. He is finding the electronic database to be remarkably useful in the task of analyzing the material. Whereas formerly he would have been making multiple index cards, sorting the material by findspot and by type of object or by other combinations, and then trying to see patterns, now he can have the machine do the sorting by any combination he can devise. The database is especially valuable in allowing him to ask for all of the examples of a specific decorative element on a seal or part of a name, and get a listing that allows him to identify even a small, badly preserved bit of clay impression with a particular person's seal. Already, at an early stage in his analysis, he is finding that the seal impressions and seals are patterning very well by findspot. Thus, a particular official can be seen to have rolled his cylinder seal on lumps of clay that were used to seal up one or two specific rooms, or to seal jars or baskets in a very limited group of rooms. Thus, he can localize the working area of a particular official. He can also, sometimes, see a person's seal on clay that is scattered somewhat wider, indicating a wider range of responsibility in the hierarchy or a distribution of goods. When he compares the information derived from the seal impressions with that on the tablets, even more intriguing information should emerge. He should begin to reconstruct a "paper trail," or rather a "clay tablet trail," throughout the complex. And when he combines this information with that from all of the other kinds of objects, he should be able to present a truly new synthesis of activity in an administrative building.

As we have indicated in previous *Annual Reports,* the final product of the Diyala Project will be a "publication" that consists of a book on paper, with chapters that discuss classes and types of objects and offer interpretations of the uses and history of each class, with limited illustrations (photographs and drawings) of the classes and types. The innovation in this "publication" lies in the fact that the book will be accompanied by a computer disk or disks that will contain the complete catalog of objects, with all of the known information and illustrations of both objects and findspots. The catalog will *not* appear in the paper volume, allowing us to reduce the cost of production and the purchase price. Instead, the buyers of the "publication"

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will be able to print out the catalog onto paper if they wish. More important, readers can take the data on the disc, reorder it in any way they desire, run a variety of analyses on the material, and look at the data in novel and unanticipated ways. If we can finish the project on schedule in the year 2000, this will be the first "publication" of its kind in Near Eastern archaeology, and perhaps in all of archaeology.

We have been fortunate enough this year to gain the support of the University of Chicago Women's Board for the project. From this source, we will receive a sizable grant that we use as a match for funds already pledged by the National Endowment for the Humanities, and we continue to seek additional contributions to complete the NEH match.

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