# ORIENTAL INSTITUTE INVESTIGATIONS IN YEMEN: PROGRESS REPORT McGuire Gibson and Tony J. Wilkinson

#### Introduction

As we write this account in late June 1996, there are reports of floods in Yemen. Marib and Shabwa are prominently mentioned, although there is no indication of damage to any archaeological sites. The reports remind us of the destructive potential that resides in the monsoon rains that are essential for cultivation in the mountains of Yemen. The still-visible remnant of the dam at Marib is only one of many examples of magnificent engineering that have been shattered by extraordinary natural events. But, when seen in context, more important than these dramatic failures are the hundreds of smaller dams (fig. 1), water-diversion structures, and the thousands of terraces that have remained intact for hundreds of years, allowing the mountain areas of Yemen to support a large population in villages throughout the millennia. It is the recording and analysis of manmade structures, both ancient and contemporary, in their natural setting that is the core of the Oriental Institute's Archaeological and Environmental Survey in the Dhamar area of Yemen.

Having decided to postpone our third season of work from the spring until the fall of 1996, we have had time to analyze and process data from earlier seasons. As a result it is now possible to provide a considerable amount of additional information on the development of the archaeology of this little-known area of highland Yemen. Building upon the pioneering work of Raymond Tindel, whose Oriental Institute dissertation tackled the chronology of the Himyarite period of the plateau (first centuries B.C. to sixth century A.D.; see fig. 2), as well as more recent work by an Italian team in the area of Wadi Yana'im some 60 km to the northeast, we can now offer an updated picture of the archaeology of highland Yemen for roughly the past seven-thousand years.

The primary aim of the Oriental Institute investigation in the Dhamar area has been to provide an archaeological context for the magnificent suites of terraced fields that the blanket valley sides in this moist part of highland Yemen. Therefore in addition to at-

tempting to provide a date for the fields, we are locating the settlements of the people that farmed the fields, demonstrating how the fields related to the natural environment of the region, and how the local economy functioned. Here however we will simply show how analysis of the survey data can now provide a much more complete framework for the chronological development of archaeology in the Dhamar region than was hitherto possible.



Figure 1. Long dam in Wadi Shalalah

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Figure 2. Inscription at Site DS 77

Our last field season was conducted in the spring of 1995 with the aid of funding from the National Science Foundation (grant no. SBR-9408714), the Oriental Institute, and a private donor, to all of whom we are particularly grateful. We also wish to acknowledge the full and generous cooperation of the General Organization of Antiquities, Manuscripts and Museums, San<sup>c</sup>a, especially Drs. M. A. Bafiqeh, Yusuf Abdullah, and Ahmad

Bataya. Mr. Ali Sanabani (1994 and 1995), and Mr. Abd al-Basset Noman (1995), the GOAMM representatives, actively participated in every stage of fieldwork and without their help and good judgment, the survey and excavations would have been impossible. We also wish to thank the management of the Yemeni Seed Potato Project, Dhamar, for providing accommodation in 1994 and part of the 1995 field season. Fieldwork was conducted in 1995 by Gibson and Wilkinson with the assistance of Christopher Edens and Jerry D. Lyon.

## The Environmental Context

After two field seasons (1994 and 1995) we now have sufficient sections through the natural sediments of the region (i.e., some thirty recorded sections) to place both archaeological sites and terraced fields within their geological context. Deep sections through recent sediments, often in excess of 7 m in total depth (see figs. 3–4), demonstrate that in many valleys, silt, sand, and loam have washed from the hillslopes either to accumulate behind terrace walls or to be deposited in valley floors where they can



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surround and obscure former fields and even wells (see 1994/ 95 Annual Report, p. 63, fig. 8). The full sedimentary sequence is shown in figure 3. At the bottom are layers deposited between about ten- to twenty-thousand years ago with the accumulation of glacial period sand dunes, gravel scree, and wadi gravels, relating to a cold, arid climate (Phases 1a, b, and c). These deposits became overlain by a conspicuous thick, dark brown organic soil that developed when the climate was significantly wetter between about five- and nine-



Figure 4. Massive section at Sedd Adh Dhra<sup>c</sup>a 2 dwarfs Jerry Lyon (at top) and Chris Edens (at base)

thousand years ago (layers 2a and b). Finally this distinctive horizon, which apparently represents the well-vegetated pristine environment that existed prior to major sedentary settlement, was covered by sands and silts of the landscape that was formed under the influence of humans ("anthrosols" in fig. 3). These deposits (layers 3a and b) were the result of sustained erosion of the preexisting soils on the slopes, caused by the stripping of vegetation through pastoral activities and intensive cultivation, and the construction of terrace walls. If we encounter man-made (archaeological) remains within any of the above distinct geological strata we can identify their specific stratigraphic context.

## **Radiocarbon Chronology**

A finer chronological subdivision than the above is however necessary if archaeological phases are to be recognized with any precision. Now, because of recent advances in the technique of radiocarbon dating, we have been able to make considerable progress in producing a cultural sequence for the region. As described in the 1994/95 Annual Report, during the 1995 field season three settlement sites were selected and within each a sounding was excavated to obtain pottery and charcoal in stratigraphic succession. And, even though the charcoal samples were relatively small, they yielded good results. Whereas in the past it was necessary to take rather large charcoal samples for radiocarbon dating (roughly sufficient to fill a 35 mm film container), now with the advent of so-called Accelerator Mass Spectrometry (AMS) dating, much smaller samples can be employed. AMS dating is a technique that enables minute fragments of charred material to be dated within plus or minus 50-150 years or so. Given the absence of an archaeological chronology for highland Yemen, this is a boon. The three sites excavated provided a total of four samples of usable charcoal for dating; which together with three samples from the pristine soil (2a in fig. 3), and a sample analyzed from Himyarite levels and dated in 1994, gives a total of eight dates for our preliminary chronological sequence (see table, fig. 5). Although this is clearly too few to furnish a definitive chronology, it is a move in the right direction and it means that now the Oriental Institute Project has one of the strongest and wide-ranging archaeological chronologies within southern Arabia.

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Archaeological Period	Site	C <sup>14</sup> Date	True or Calibrated Date (B.C./A.D.)
Himyarite	Site 55E	1980 ± 50	60 b.ca.d. 130
Iron Age	Site 82 Site 15	2500 ± 70 2640 ± 100	400-805 в.с. 505-990 в.с.
Late Bronze Age	Site 66.1	3100 ± 120	1005–1620 в.с.
Middle Bronze Age	Site 66.2	3600 ± 80	1735–2145 в.с.
Early Bronze Age	Ceramic Dating Only		
Pre-Bronze Age	Moshak Sedd adh-Dhra <sup>s</sup> II, #2 Sedd adh-Dhra <sup>s</sup> II, #1	4350 ± 60 6290 ± 70 7080 ± 140	2880-3095 B.C. 5060-5335 B.C. 5635-6175 B.C.

Figure 5. Table of radiocarbon dates from sites in the Dhamar area

The two samples, from Sites 15 (fig. 6) and 82, were dated within the earlier part of the first millennium B.C., thus confirming our suspicions that these sites were approximately contemporary with the Sabaean kingdoms of the desert fringe. Perhaps even more satisfying were two dates from superimposed strata from Site 66, which fell within the early and later second millennium B.C. respectively. In addition, charcoal from an archaeological layer containing Himyarite pottery, dug by a local man at Site 55E, provided a date in the range of the first century B.C. to the second century A.D. This extended our chronology into the period when textual inscriptions became commonplace in the highlands. The above dates indicate that pottery excavated from the radiocarbon dated levels can be used to estimate ages at other sites which yield the same type of pottery. Furthermore, what had been a gaping void between the ceramically-dated third millennium B.C. occupations and those of the first millennium B.C. has now been partially filled. When the three dates provided by the early relict soil (2a in fig. 3) are added it can be seen that the project now has a skeleton chronology from around 6000 B.C. until the first/second centuries A.D.

# **Ceramic Chronology**

Working within the chronological framework outlined above we can now be more certain about the third millennium date of pottery collected from a number of sites in 1994 and 1995 and provisionally called Bronze Age by us. These sites, the pottery from which has been drawn and analyzed by Christopher Edens, is remarkably similar to ceramics from the Italian project in the Wadi Yana<sup>c</sup>im, some 50 to 60 km to the north of the Oriental Institute Project area. When the Dhamar region assemblage is also dated by reference to radiocarbon-dated charred materials, we will then have a much clearer view of the earliest phases of sedentary settlement of the highlands.

For the Himyarite period, the recovery of two sherds inscribed with Old South Arabian script (alas not particularly meaningful) has reinforced our knowledge of the Himyarite cultural assemblage of the early centuries A.D. (fig. 7).

## Landscape Context at Talaba-Harwarwah

Finally, a key aspect of the project is the analysis of sites within their total landscape setting so that settlements are viewed not in isolation but as part of an evolving land-scape, which is best illustrated by a map of the area between the village of Harwarwah

and Talaba cisterns made in 1995 (fig. 8), where the complexity of the landscape of highland Yemen is clearly apparent. For example, a landscape of small patchwork fields (dashed lines in fig. 8) together with longer wall alignments (solid lines in fig. 8) can be traced across the terrain. Some of these are heavily weathered and coated with "desert varnish," a dark iron/manganese-rich coating that accumulates over thousands of years. Such wall-like alignments also flank ancient routes (see 1994/95 Annual Report, p. 61, fig. 6) and three of



Figure 6. Iron Age building at DS 15 (Ashraf near Dafineh), one of which was excavated in 1995

these actually focus upon the two cisterns at Talaba (Site 5). The presence of Himyarite dedicatory inscriptions (first century B.C. to sixth century A.D.) carved on the cistern walls suggests that not only were the cisterns in use at this time (if not earlier) but that the tracks or roads which lead from these inscribed cisterns to the Himyarite site of Harwarwah (Site 4) must also have been in use at this time. Also, near one of the Talaba cisterns is a large square platform of stones of considerable antiquity, a threshing floor, probably dated to the Iron Age or, more likely, the Himyarite period. In addition to the above vestiges of Himyarite activity, the landscape can be seen to be peppered with ancient settlement sites which, according to the surface pottery, range in date from third millennium B.C. (Sites 150, 156, and 153) through Iron Age (151) and

the Himyarite period (within the village of Harwarwah, site 4).

In terms of the development of a cultural chronology, further information on archaeological phases can be gleaned from so-called horizontal stratigraphy, as the following example from Site 153 should illustrate. This technique supplements our



Figure 7. Inscribed Himyarite sherd from the site of Madhourah

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ceramic-based dating of the site by examining the architecture of individual buildings and their interrelationship across wide areas (figs. 8–9). Pottery at Site 153 was primarily of either the third millennium B.C. or the Iron Age (first millennium B.C.), with the former being more common at the eastern end of the site. One structure, the small oval building (1) resembled the distinctive third millennium buildings recorded by the Italian team in the Wadi Yana'im to the northeast. This and one or two other stray elements could therefore relate to the Bronze Age pottery recorded. The forms of the rectilinear structures (2) probably indicate that they belonged to a later phase, namely that which yielded the Iron Age pottery (first millennium B.C.). In terms of the horizontal stratigraphy, these buildings were clearly in a collapsed state when the stone wall (3) was built across the area. This apparent land division can then be traced on the



Figure 9. Detailed plan of DS 153

overall map (fig. 8) as part of a larger pattern of boundaries that possibly relate to a large scale field system. Such a relict field system might have been laid out during an earlier phase of landscape development, to then be encroached upon and partly destroyed by the present system of small, often terraced fields. If the Phase B buildings are indeed Iron Age, then this system of major walls is post-Iron Age and pre-modern, thus placing it roughly in the same time range as the tracks that focus on the Himyarite cistern at Talaba. In addition a large square platform of stones of considerable antiquity is a threshing floor, probably dated to the Iron Age or Himyarite period.

Clearly the Harwarwah-Talaba area does not provide a watertight chronology but rather sketches out an evolutionary sequence of varying probabilities. Our study here demonstrates that by harnessing pottery, architecture, and the elements enshrined within the overall landscape, one can develop a much more complete picture of a region than by simply excavating an individual site. Therefore among the objectives of our forthcoming season in the fall of 1996 will not only be an attempt to fill in the gap in the table (fig. 5) by supplying radiocarbon dates for the early Bronze Age but also an effort to extend the ceramic assemblage for the other dated phases. In addition further endeavors will be made to determine whether the earliest phase, confidently asserted here as pre-Bronze Age, is pre-Bronze Age, but also whether or not there is any association with in situ settlement that predates that of the early Bronze Age sites so far recognized.