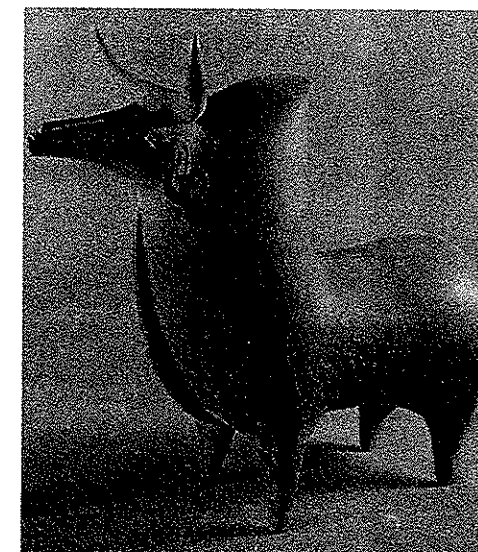


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A LATE SUSIANA SOCIETY IN SOUTHWESTERN IRAN

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Abstract: The application of innovative ways of thinking about human communities and new techniques of excavation and analysis have given us different perspectives on the earliest Iranian economic and political formations, from those of Palaeolithic peoples to those of the early empires. Ezat Negahban and his students have shown the benefits of such broader approaches in their studies of Chalcolithic and Early Iron Age peoples in the valleys of the north of Iran and of the Middle Elamite peoples of the southwest. In this paper, we offer, as another example of such integrative research, a similarly broad perspective on a Late Chalcolithic society in the foothills of the Zagros Mountains. We have chosen to summarize a particular archaeological manifestation, the Farukh Phase of the mid-fifth millennium BC on the Deh Luran Plain, one which enables us to criticize our own methods, and to suggest improved approaches for the future.

Introduction

The Deh Luran Plain is a small element in the geographical panorama of Southwest Asia (Fig. 1). Separated from the Mesopotamian Plain only by the low ridge of the Jebel Hamrin, it has the limited rainfall and fierce summer heat of Mesopotamia. Surrounded by the foothills of that portion of the Zagros front ranges known as "Pusht-e Kuh," it has only limited precipitation and the erratic and seasonally saline water supply of several smaller Zagros streams.

This plain has been important for archaeologists because of the variety of past cultural processes which can be studied within its bounds. Close to the boundary between the desertic alluvial plains and the oak-forested Zagros Mountains, it is an ideal place to evaluate hypotheses about the importance of these environments in the change from food collecting to food production and in the subsequent development of irrigation techniques. Located on a traditional transport route between Mesopotamia proper and other regions, it is an area in which one can collect data useful in the study of the relation between changes in inter-regional exchange and changes in social complexity.

Various small excavations on the plain provide an almost unbroken stratigraphic sequence covering the seven-thousand-year span of development from the establishment of early seasonal herding and collecting camps around 8000 BC up to the collapse of the early transregional empires around 1300 BC. With the ceramic evidence from this sequence, we can date surface sites and define the settlement pattern of each period. With the evidence of subsistence remains, raw material extraction, crafts, and houses from our small excavations, we can evaluate ideas about the development of settlement systems during this long period of time.

Geography of the Deh Luran Plain

The ridges and valleys of the Zagros front ranges formed during the last ten million years as the Arabian fragment of the African continental plate slid beneath the Eurasian plate, compressing and folding the abyssal sediments of the ancient Tethys Sea. The basin to the southwest of the folded and uplifted outer Zagros has filled with sediments deposited by the tributaries of the Euphrates, Tigris, and Karun Rivers. By 5000 BC, the sea had risen to fill the lower, easterly end of this depression and create the Persian Gulf. The northeast edge of the Tigris-Euphrates alluvium is marked by the low anticlinal fold of the Jebel Hamrin, which reaches a maximum elevation of only 400 m. The Deh Luran Plain is in a depression between the Jebel Hamrin and the first great fold of the Pusht-e Kuh, the oak-covered Kuh-e Siah, a limestone massif which rises to an elevation of nearly 1400 m. The plain itself (Fig. 2), including its alluvial fans, extends for almost 60 km from northwest to southeast, and is about 20 km wide. The valley floor covers approximately 940 square kilometers. The topography of the plain has been formed by the action of two small rivers, the Mehme and the Dawairij Rivers, seasonally variable streams which originate in the front range

Kirkby (1977) has presented a study of the soils, hydrology, and vegetation of the Deh Luran Plain, particularly useful in understanding ancient land use on the plain. Kirkby found that the rivers, seasonal wadis, and springs watering the plain have varying levels of salinity, higher in the summer and lower in the winter, particularly after rainfall in the mountains brings sudden floods. Only the spring of 'Ain Girzan near Musiyan on the southeast edge of the plain, provides a regular supply of fresh water. The salts are dissolved out of the coarser sediments on the slopes of the valley margins, but accumulate in finer grained soils in and around the centrally located seasonal swamp, the drainage of which is blocked by the alluvial fans of the rivers. Although these changes in soils and salinity are continuous, characteristic vegetation associations allow one to divide the plain into four distinct areas, each of which

presents different opportunities to farmers and herders (Hole, Flannery and Neely 1969: 16-19; Henry Wright 1981: 63-64).

1. The alluvial slopes have a dense grassy cover on Pleistocene gravels where rivers enter the plain, and a cover of sparse grass and *Zizyphus* or jujube trees elsewhere. These areas ordinarily do not retain enough moisture for rainfall agriculture, but various forms of terracing, small dams, and small canals carrying the water of various springs have allowed some farming in the past. Traditionally, these slopes have been used for grazing by transhumant pastoralists who moved seasonally between higher montane summer pastures and lower winter pastures on the Deh Luran Plain. Wild sheep and gazelle were common in such areas.

2. The older alluvial plain formed by the fans of the two rivers, with denuded silty and sandy soils, has patches of small shrubs. These areas can retain moisture sufficient for dry-farming in one year out of two, especially in areas where the water table is higher or where floodwaters can be concentrated. With canal irrigation, winter agriculture would have been quite reliable. Floods late in the growing season, however, can easily destroy crops in such areas. Gazelles are still seen in this area, and in the past the wild half-ass or onager must have grazed here.

3. The present river flood plains, now incised four to six meters below the surface of the alluvial fans, are subject to frequent flooding, and consequently have irregular surfaces with gravel and sand banks as well as channel scars. Dense thickets of tamarisk and other small trees thrive because of the high water table. Fallow deer and wild boar lived in these thickets until recently.

4. The saline depressions within the older alluvial plain are flooded in the winter and become muddy salt-flats in the summer. A range of salt-loving shrubs live in this environment. Wild boar will hide in such areas during the day, and range in nearby fields at night.

Since this report focuses on the period around 4500 BC, it is important to ascertain what the plain was like prior to down-cutting and before the deposits of alluvial sediments on the plain had reached their present depth. Kirkby (1977: 285-287) argues for the existence of braided streams with shifting multiple channels, allowing irrigation with the simplest of diversion systems. Though the river flood plains would have been limited in area, the botanical samples from the excavated sites show that tamarisk was easily obtained, and we can presume that it was dispersed on the edges of fields, as it is today in a few areas below the town of Deh Luran. The faunal samples from the excavated sites indicate that aquatic resources were more heavily used before 5000 BC. Although Kirkby does not believe that a permanent lake could have existed on the Deh Luran Plain (Kirkby 1977: 286-287), even with

more rainfall, it seems likely that water supplies were more regular and less saline. Clearly, more paleoecological research, building on the foundation created by Kirkby, is needed.

A History of Archaeological Research on the Deh Luran Plain

The plain was first surveyed in 1903 by J.-E. Gautier and G. Lampre of the Mission archéologique en Perse. Their task was to investigate the remains on and near the large mound of Tappeh Musiyan, but they did visit a number of other sites on the central portion of the plain and provided a brief description and a map (Gautier and Lampre 1905: 60-62, Fig. 94). Nearly sixty years later, the Director of the University of Chicago's Prehistoric Project, Robert Braidwood, and one of the project's geologists, Richard Watson, visited the plain. In the following year, the Prehistoric Project supported a visit by Frank Hole and Kent Flannery to the Deh Luran Plain for several weeks of survey on the plain and of test excavations at this site, which is today called "Tappeh Ali Kosh." In 1963, Hole instituted the Rice University Archaeological Project and returned with Flannery and James Neely to conduct major excavations at Tappeh Ali Kosh (DL-21) and the later site of Tappeh Sabz (DL-31), relevant to the beginnings of irrigation agriculture (Hole, Flannery and Neely 1969). Some sites were revisited, but no formal survey was done. The reports of Hole, Flannery and Neely led Henry Wright of the University of Michigan's Museum of Anthropology to come to the plain at the beginning of 1968 for a season of excavation at Tappeh Farukhabad (DL-32) (Henry Wright 1981). The survey project undertaken by Neely in 1968-1969 was the first actually directed at the full recording of regional settlement patterns (Neely and Wright 1994). At the same time, Hole conducted excavations at Chagha Sefid (DL-23) (Hole 1977). All of these programs were supported by grants from the U.S. National Science Foundation. There has been no archaeological fieldwork on the plain since 1969, and we have no idea what damage was done to the cultural sites on the plain as a consequence of the long and tragic war of the 1980s.

Defining the Farukh Phase

An archaeological phase is the material manifestation of a social formation during a relatively brief period of time within a relatively limited geographical space (Willey and Phillips 1958: 22). In the absence of precise chronologies, we take artifacts attributes which change through time and space, particularly stylistic attributes which can be shown to be explicit social markers, to be definitive of archaeological phases. Fortunately, the early sedentary communities of southwestern Iran have

common and distinctively decorated ceramics, which enable a phase to be recognized from surface collections alone.

Ceramic assemblages of the Farukh Phase (Fig. 3), known from the excavations at Farukhabad, exhibit fabrics and paints similar to those of other later Susiana phases. A minority of vessels have a brickly red fabric, with traces of limestone or mica inclusions, and a red slip. Most of these are open bowls. The majority have a buff or light brown fabrics, larger jars and basins having sand inclusions, and small bowls having few or no inclusions. The buff ware vessels have a wide range of decorations, and a number of associations of design and form appear to be characteristic only of this phase (Henry Wright 1981: 23-42, 57-59). Identification, even in small samples, is straightforward.

A Farukh Phase surface assemblage has fine, unpainted, bell-shaped bowls represented by rims (LS-RB-1), narrow bases (LS-BB-2), and shaved bases (LS-BB-3) (Fig. 3:d and Henry Wright 1981, Figs. 13-14). Various out-leaned or vertical-sided bowls had exterior bands (LS-RB-2, 3) (Fig. 3:e-f and Henry Wright 1981, Fig. 15), horizontal curved lines (LS-RB-5, 6) (Henry Wright 1981, Fig. 16:a-d), vertical lines (LS-RB-8), vertical curved lines (LS-RB-9) (Henry Wright 1981, Fig. 16:f-h), fine dot motifs (LS-RB-10) (Fig. 3:h-i and Henry Wright 1981, Fig. 17), diamond motifs (LS-RB-11-13) (Fig. 3:k and Henry Wright 1981, Fig. 20), sigma motifs (LS-RB-14) (Fig. 3:j and Henry Wright 1981, Fig. 18:a-d), step motifs (LS-RB-15) (Fig. 3:l and Henry Wright 1981, Fig. 19), and others. As before, these painted small to medium-sized bowls had either wide bases (LS-BB-1) or ring bases (LS-BB-4) (Fig. 3:l). Large basins, usually plain (Fig. 3:c), but with some interior bands (Henry Wright 1981, Fig. 23), are common. High-necked jars with plain (LS-RJ-1) or fully painted (LS-RJ-3) necks continue, and similar jars with painted bands on the neck (LS-RJ-2, 3) (Fig. 3:a and Henry Wright 1981, Fig. 24:a-g) appear. The sherds of small low neck jars are rare in the surface collections (LS-RJ-4) (Fig. 3:b and Henry Wright 1981, Fig. 24:h-j).

Several elements and variants among those listed above seem to be good indicators of Farukh Phase occupation:

- LS-BB-3: The Susiana Buff shaved cup base.
- LS-RB-10: The Susiana Black-on-buff bowl with fine dots.
- LS-RB-13: The Susiana Black-on-buff bowl with diamond motifs, often filled with oblique parallel lines (Henry Wright 1981, Figs. 20:c, 21:d, f).
- LS-RB-15: The Susiana Black-on-buff bowl with step motifs.
- LS-RJ-2, 3: The Susiana Black-on-buff jar necks with horizontal bands.

It is important to note, however, that diamond motifs are relatively early in the

Farukh Phase sequence at Farukhabad, dot motifs and step motifs are most common in the middle of the sequence, and by the end of this sequence step motifs and sigma motifs predominate (Henry Wright 1981: 57-58), with the latter continuing into the succeeding Susa Phase. Confirmation of these suggestions with further stratigraphic work would allow a more precise internal ceramic chronology for the Farukh Phase and a finer dating of our surface samples.

The Farukh Phase shows few parallels with assemblages over the Jebel Hamrin in Mesopotamia proper, but it has close stylistic parallels to assemblages on the Susiana Plain to the southeast, formerly termed 'Susiana d' (Le Breton 1957), more recently 'Phase 12' (Dollfus 1978) and 'Late Susiana 1' (Alizadeh 1992).

The absolute age of the Farukh Phase must be determined by the calibration of radiocarbon age determinations. All existing determinations for the Deh Luran Plain were made more than twenty years ago, before improvements in pre-treatment and counters were available, and the dating of new samples would very likely force revisions. However calibration (Stuiver and Pearson 1993) of the available determinations indicates a relatively long span from 4600 BC to 4300 BC for the Farukh Phase.

Settlement of the Farukh Phase

During the 1980s, the survey samples and notes from the Deh Luran Plain were completely restudied. Some sites were re-dated, and some site sizes have been re-evaluated (Neely and Wright 1994). Because both Neely's survey and Kirkby's study indicate that there was little alluviation on the plain after Farukh Phase times and because there are few large late sites that might completely blanket earlier site deposits, we are reasonably sure that we have recorded all the surviving sites in the intensively surveyed central part of the plain. What is difficult to assess is the complete loss of sites as a result of lateral erosion by the rivers. However, since the down-cut river flood plains are relatively narrow, such totally destroyed sites were likely to have been relatively small. Were it possible to re-survey on the plain today, we would undertake a more intensive examination of the eastern and western extremities of the plain, we would utilize coring to establish site extents and depths and backhoe trenching to firmly date canal traces, and we would take advantage of studies of soils, pollen, phytoliths, diatoms, and other indications of past environments. Given the available samples, however, we can say that ceramics of this phase were found on 12 sites (Fig. 2), estimated to cover an aggregate area of more than 16.5 ha (Table 1) (Neely and Wright 1994: 171-172).

Among the surviving sites, there is much variation in size and structure. Our

Table 1. Farukh Phase Settlement

SITE NUMBER	NAME	AREA (ha)	TYPE	PLATFORM
Centers				
11	Garmasi	1.54	d	-
20	Musiyan	c. 9.00	b	-
32	Farukhabad	c. 2.50	a	yes
Villages & Hamlets				
15	-	0.67	d	-
23	Chagha Sefid	0.12	a	-
27	Tenel Ramon	c. 1.001	a	yes
29	Ashrafabad	0.40	a	-
71	Aliabad	?	a	-
85	Muradabad	trace	c	yes
247	-	0.67	c	-
262	-	0.20	d	yes
286SW	-	0.40	d	yes

interpretation of the sherd distribution on Musiyan, the largest center, is that it had about nine hectares of built-up area (Neely and Wright 1994: 57-67). We have no direct information on internal variation within this area, but it was likely to have been even more complex than that attested by the excavations at Farukhabad, as discussed below. In contrast to the larger centers are small settlements of a hectare or less. Some of these are small low mounds with an even scatter of sherds and stone tools. It seems reasonable to argue that these are simple hamlets or small villages, without enduring social differentiation. However, almost half of the small settlements have high remnants of clean silt, probably eroded mud brick platforms like the ones found in one portion of Farukhabad. If, as argued below for Farukhabad, these platforms mark the residences of ranking families, these smaller settlements could be the rural residences of such families.

What population is indicated by the known Farukh Phase settlements? One way to estimate population is to multiply site area by an assumed population density factor (Adams 1965; Kramer 1980). Assuming population density of 100 people per hectare, the known sites of the Deh Luran Plain during the Farukh Phase could have had about 1700 people. However, architectural evidence from Farukhabad (DL-32) suggests a dense packing of housing in this small center, and some housing may have had two stories. If housing was denser at centers, approaching the densities recorded by F. G. L. Gremliza for the Susiana Plain in the mid-20th century (Gremliza

1962), with population in the centers reaching as high as 200 per hectare, one could calculate population approaching 2950 people for the plain. However, this method of population estimation makes the tacit assumption that all sites of a given phase were occupied throughout that phase, and almost certainly over-estimates the population at any point in time. It is much more likely that some were occupied before but abandoned during the given phase, some were occupied throughout a phase, some were first occupied during the given phase and continued, and others were occupied only for a brief time during the given phase. These four types of occupational history are indicated in the fourth column of Table 1 by 'a', 'b', 'c', and 'd' respectively. Robert Dewar has developed a method for estimating the average rates of site abandonment and site foundation from such data. With these rates, he is able to model the average number of sites occupied at any point during a period (Dewar 1991). He has applied this method to the Deh Luran data, modifying his estimates with the assumption that sites on a particular canal were probably occupied and abandoned at about the same time, to arrive at estimates of the number of sites simultaneously occupied during each phase in Deh Luran (Dewar in Neely and Wright 1994: 200-210). With these estimates, we can estimate a mean population of about 2240 people during the Farukh Phase, keeping in mind that this average masks important changes during the Farukh Phase, probably decreasing from a higher population at the beginning of the phase to a lower population toward the end.

Economic and Political Process in a Small Center of the Farukh Phase: Excavations at Tappeh Farukhabad

Farukhabad is thought to have been the second largest Farukh Phase settlement on the plain before the mound was deeply cut by Mehme River. It lies between the main center of Musiyan and a cluster of smaller settlements on the western portion of the plain. We hoped that excavation would reveal direct evidence of Farukhabad's role as a secondary center, mediating relations between these smaller sites and the major center.

Because Farukhabad was partly cut away by the Mehme River, it was possible to efficiently sample the central architectural area of the deeply buried Farukh Phase settlement. However, we had the resources only for two relatively small exposures at arbitrarily selected points on this accidental transect. Excavation was by natural strata, and all refuse was dry-screened, our Luri workers having been well-trained in this art by Hole, Flannery, and Neely. Excavated volumes were recorded, allowing study of the changes in densities of discarded artifacts, useful proxies for discard rates and thus for the performance of various kinds of activities. We were fortunate

that Excavation A revealed a sequence of elaborate buildings on mud brick platforms and Excavation B revealed a contrasting sequence of much more modest buildings without platforms (Henry Wright 1981, Fig. 9).

The evidence of settlement hierarchy is confirmed by the evidence of residential groups of differing status at Farukhabad. The occupants of the area of elaborate buildings controlled large storage structures, consumed more beverages, and had preferential access to exotic chipped stone raw materials, in contrast to the occupants of the area of modest buildings in other parts of the site (Henry Wright 1981: 65-66). The rebuilding of the elaborate buildings, set on low mud brick platforms and carefully maintained, in one area and the rebuilding of poorly maintained modest buildings in the other area, generation after generation, suggests that social position was hereditary.

Beyond the indications of social organization, there is evidence of the control of activities in the debris from the middle Farukh Phase layers of Excavations A and B. As we would expect, most domestic debris in the two areas is similar. For example the basic range of cooking and serving ceramics is the same. However, plain cups probably for the serving of beverages, are three times as common in trash around the elaborate structures (4.11 rim sherds per cubic meter) than in that around the modest structures (1.85 per cubic meter), indicating that ranking families more commonly extended hospitality to others (Henry Wright 1981: 62, Table 13). Also, people in both areas were engaged in crafts such as spinning (Henry Wright 1981: 51-52) and the preparation of bitumen obtained from only 12 km away, apparently primarily for export since there is little use for bitumen other than as an occasional adhesive and a coating for mats. However, the debris of the working of Medium Gray chert cobbles, obtained from 30 km or more the east, into blade cores, is more common around the elaborate buildings. These were probably obtained by way of the large center of *Mušriyān*, perhaps via relations with more prestigious individuals there (Henry Wright 1981: 262-275). There is also evidence of the process of control by ranking groups, specifically the manipulation of social display perhaps to gain contributed goods and labor (Henry Wright 1994: 75-79, Table 2). After the construction of the first elaborate building, during its period of use and decay, there was decreasing bitumen production and decreasing consumption of imported exotic cherts around both elaborate (A 30-29) and modest (B 46-44) buildings. Just before and during the construction of the second elaborate building and its associated storage structure, bitumen production increased, particularly around the modest buildings (B 43-42) and discard of the more exotic chert increases, particularly around the elaborate buildings, but also around the modest buildings (A 28-27).

During the use of this second building, these indications of greater production and consumption continue. Unfortunately, the refuse samples associated with the decay of this second building and the construction and use of the third building are few. Nonetheless, the limited evidence we do have is conformable with the idea that ranking households of Farukhabad could motivate other families to produce more for exchange, and could marshal labor to build and maintain elaborate structures.

What can be said about the broader relations of the Farukh Phase community? While the few pieces of obsidian for the region of Lake Van could have been re-cycled from the surface of long abandoned early village sites on the Deh Luran Plain, the Fine Mottled Gray cherts probably came from the middle Euphrates basin to the West, and the Fine Translucent Brown and Tan cherts probably came from the upper Karun basin in the Zagros to the east (Henry Wright 1981: 272-273). While the close stylistic relations with settlements of the Susiana Plain, noted above, imply social relations via which such material could have been obtained, there is no indication that Deh Luran bitumens reached the Susiana Plain until the fourth millennium BC (cf. Marschner, Duffy and Wright 1978), and Susiana communities had access to the same chert deposits as those of Deh Luran. In contrast, at this time, there were few stylistic relations with contemporary Late 'Ubaid communities in Mesopotamia proper, an area whose river traffic would have required much bitumen for the water-proofing of boats. While we have no idea how exchange would have been mediated with these societies to the south and west, it seems likely to have involved mechanisms different from those linking Deh Luran with the rest of Susiana. It is possible that exchange to the west and south was channeled through intermediaries, such as the transhumants whose cemetery was found Dum Gar-e Parchinah A, 90 km northwest of Deh Luran in Pusht-e Kuh (Vanden Berghe 1975), whose ceramic iconography is related to both Farukh and Late 'Ubaid ceramics, but is distinctly different. In any event, these puzzling material and stylistic relationships, are an indication of how little theory exists to guide research on exchange between chiefdoms.

A key question remains: how did the ranking figures of Deh Luran at times motivate others to support their activities? Unlike the later Susa Phase of the Susiana Plain (Pollock 1983; Henry Wright 1994: 73-74), there is no differentiated iconography used on ceramics, seals, and buildings, an iconography which could mark an ideology sustaining elite status and even claims for divinity. Instead, the different households of Farukhabad and all the other Farukh Phase communities of the plain share a common series of ceramic motifs. We can propose that status variation among Farukh Phase households was sanctioned by the kinship system and by the

flow of presentations, but we lack the larger architectural exposures and mortuary evidence that would allow the testing of such ideas. We can, however, examine the evidence of the economic bases of Farukh Phase communities, to better assess how this elementary hierarchical organization operated.

The Use of Plants During the Farukh Phase

The Deh Luran Plain was the locus of Hans Helbaek's first comprehensive study of ancient agriculture using samples of seeds recovered by water flotation (Helbaek in Hole, Flannery, and Neely 1969). In the excavation of Farukh Phase deposits at Farukhabad, we tried to follow Helbaek's methods, but in retrospect, it is clear that our 1-2 liter samples were too small, and that flotation of ten or more liters of sediment is needed. In addition, we did not routinely keep samples for phytolith analysis, a method which documents other aspects of plant use. Nevertheless, we have a basic understanding of exploitation of field crops by Farukh peoples.

Various lines of evidence indicate that small scale canal irrigation flourished on the Mehmeah alluvial fan. First, as Helbaek noted regarding the immediately preceding phases, the complex of crops grown (flax, lentils, six-row hulled barley, hexaploid free-threshing wheat, and bread wheat) imply irrigation (Helbaek in Hole, Flannery, and Neely 1969: 416). However, only grains and wild plant remains occur in samples from the Farukh Phase. Second, we have found canals closely articulated with several sites (Neely and Wright 1994: 185-200), with canals associated with Farukh sites varying from at least 2.4 to 6.5 km in length. Third, one element in the rodent fauna of the fifth millennium Deh Luran sites, a large variant of the Indian gerbil (*Tatera indica*) indicates lush, well-watered fields that were probably irrigated at this time (Redding in Henry Wright 1981: 252-260, Appendix E). The archaeobotanical evidence (Miller in Henry Wright 1981: 227-232, Appendix F2) from Farukhabad indicate the crops cultivated in Farukh Phase fields included barley and emmer wheat.

These crops were harvested with stone-bladed sickles. It is notable that discarded sickle blades are more than twice as common around the modest housing (0.59 sickles/m³) than around the elaborate housing (0.25 sickles/m³) (Henry Wright 1981: Table 5). The grain was returned to the site to be stored in either small chambers in modest housing or in large granaries near the elaborate housing. Thus, those whose households appear to devote less labor to the harvest appear to control the storage of more of the product.

We now know that many of the small carbonized seeds found in the flotation samples from Farukhabad are not related to human diet, but to the diet of the

domestic animals which grazed in fallow fields and uncultivated areas on the plain (Miller 1984). The tiny seeds introduced into the site by the burning of animal dung indicate that animals grazed on small seeded clover-like legumes (*Medicago*, *Astragalus*, *Trigonella*, *Trifolium/Melilotus*), all highly nutritious and indicative of rich pastures, not yet ravaged by overgrazing or salinization from over-irrigation.

Hunting and Herding Animals During the Farukh Phase

At Farukhabad, as at all other Deh Luran excavations, all deposits were dry-screened, the volumes of all units were recorded, and all bones were kept for analysis. Our only regrets are that more excavation would have given us samples sufficient to reconstruct mortality patterns and more flotation would have given us more wet-screened samples from the heavy fractions of the flotation samples.

The faunal evidence (Redding in Henry Wright 1981) from Farukhabad indicate that the hunting of gazelle and onager on and near the Deh Luran Plain continued as it had for millennia. While gazelles can be stalked or trapped by small hunting parties, onager would probably have been taken by drives or other strategies requiring larger groups. Both the larger equids and smaller gazelles were returned whole to the site, and butchered locally. Intriguingly, while the density of bone around the different kinds of housing is similar, more gazelle bone is discarded around the elaborate buildings, while more onager bone was discarded around the modest buildings (Redding in Henry Wright 1981: 253-254). Though the samples are small, this suggests that different kinds of social groups at the small center of Farukhabad organized the hunt for different animals and had the right to butcher these animals.

The herding of sheep, goats and cows also continued. Cows are not common in the samples, but occur in all excavated areas. They were, however, probably important not simply as food, but as draft animals useful in cultivating the heavy soils of the irrigated fields. One probable cow figurine appears to have a harness represented with paint (Henry Wright 1981: 51-53, Pl. 9). There are roughly thirty times more sheep and goat elements than cattle elements. The ratio of identified sheep elements to goat elements is 2.5:1. However, since sheep produce 0.8 lambs per ewe and goats produce 1.2 kids per doe, the ratio of sheep to goats in the living herd would have been closer to 3.7:1. While the evidence of small weed seeds indicates the grazing of local pastures, it is likely that the wild almonds found in some samples of this phase were brought to the site from the front range by returning shepherds. The small faunal samples suggest that only a few animals were killed during their first year of life, but that only half (presumably the breeding females) survived past the age of two (Redding in Henry Wright 1981: 248-250). With such limited mortality

data, it is difficult to determine whether the major strategy was to maximize meat production, secondary products, or herd security (Redding 1984). The evidence for the consumption of sheep and goats differs around the different types of buildings. Around the elaborate buildings, we found that 34% of the sheep-goat limb bones were the portions that bear most of the meat, very close to the 30% expected if whole animals are being butchered and consumed in an area of a community. In contrast, around the simple buildings, we found that 55% of the limb bones were meat-bearing, indicating that people in this area were receiving meat from animals butchered elsewhere. While boiled or grilled mutton or goat were the most commonly eaten meats in both areas, it seems that meat moved to different social groups by different pathways.

The Farukh Phase as a Cultural Phenomenon

Even with the most basic kind of survey and with limited excavation evidence, we can outline several key cultural structures and political and economic processes operating on the Deh Luran Plain during the mid-fifth millennium BC. More than 2000 people resided in at least eleven communities of very different sizes in the irrigable areas of this relatively small and isolated valley. While it is reasonable to presume that large settlements such as Musiyan and Farukhabad were centers dominating nearby small settlements, the excavations at Farukhabad enable us to evaluate different ideas about how such dominance was manifested. The evidence is not conformable with a structure of similar social units with an egalitarian ideology. The architectural contrasts, the indications of sumptuary rules relating to animals, the indications of differential responsibilities for hospitality, the differential control of labor, and differing access to exotic materials, all indicate hierarchically ranked social units. There is evidence that increased labor for the construction of elaborate buildings was correlated with the redistribution of exotic goods, and increased labor for grain production may have been related to the redistribution of animal products. Such redistribution within a structure of kin obligations may have a major justification for economic differentials, since there is no indication of a differentiated ideology of social inequality.

Several lessons can be learned both from our successes and our failures: First, without quantitative control over the densities of all kinds of debris, both floated and screened, we would not have been able to take advantage of the integration of the cultural system to understand its basic organization. For example, without the evidence of sickle density, the existence of different storage structures would have remained an architectural trait, rather than an indication of the extraction of grain

from farmers and without the evidence of bone quantities and weed seeds, we could not have begun to understand either herding tactics, herd structure, or the control of meat distribution. We hope that future excavations in similar sites will have even more screening and floating of measured volumes of debris.

Second, we could be more confident in our analyses if we had sampled more sequences of architectural debris. This is not to advocate extensive exposure of Farukh Phase architecture, which would be a destructive use of a diminishing archaeological record, and well beyond our resources, given the eight meters of later deposits covering the uppermost Farukh Phase layers. To better understand social units, however, it would have been useful to expose more of the individual building units in Excavations A and B, and it would have been useful to have at least two more similar building sequences.

Third, if we could do the project over again, we would have retained more varied kinds of samples and curated them more carefully. We have kept archaeological soil samples in the form of blocks, but we do not have enough, and we conducted no geoarchaeological sampling around the site. We also now regret that all the curated artifact collections have been thoroughly cleaned. Had we kept samples of bone, stone, and ceramic unwashed in sterile bags, new approaches to use wear and residue analysis could be pursued with confidence.

Finally, while we may have useful theories about the internal organization of societies such as those represented by the Farukh Phase-ranked societies or chiefdoms in the broad sense—we do not have well developed ideas about exchange and alliance between them, and we therefore do not know what questions to ask of the data on exchange. In addition to improving fieldwork, we should also improve our thinking, and we therefore do not know what questions to ask of the data on exchange. In addition to improving fieldwork, we should also improve our thinking.

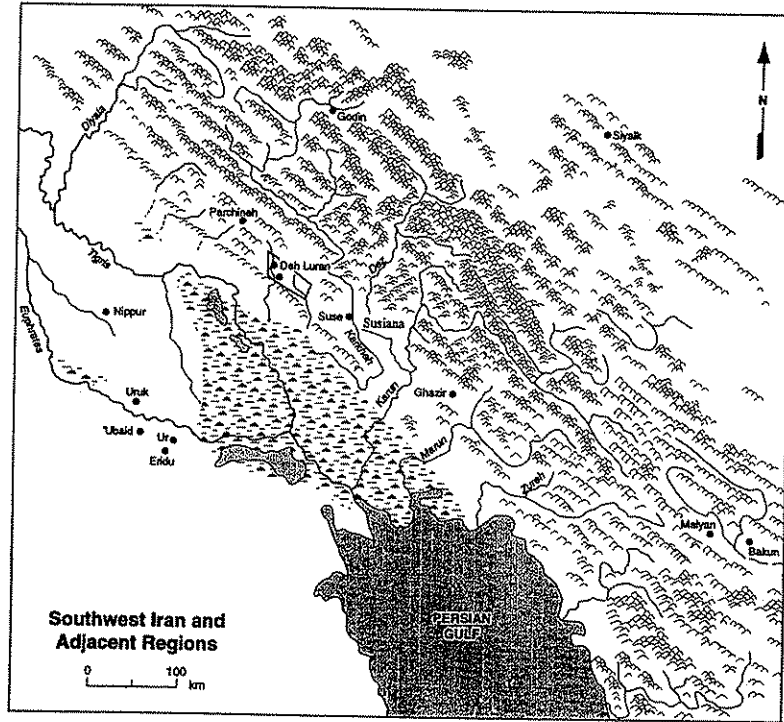


Fig. 1. Map of southwestern Iran and adjacent regions in the mid-fifth millennium BC.

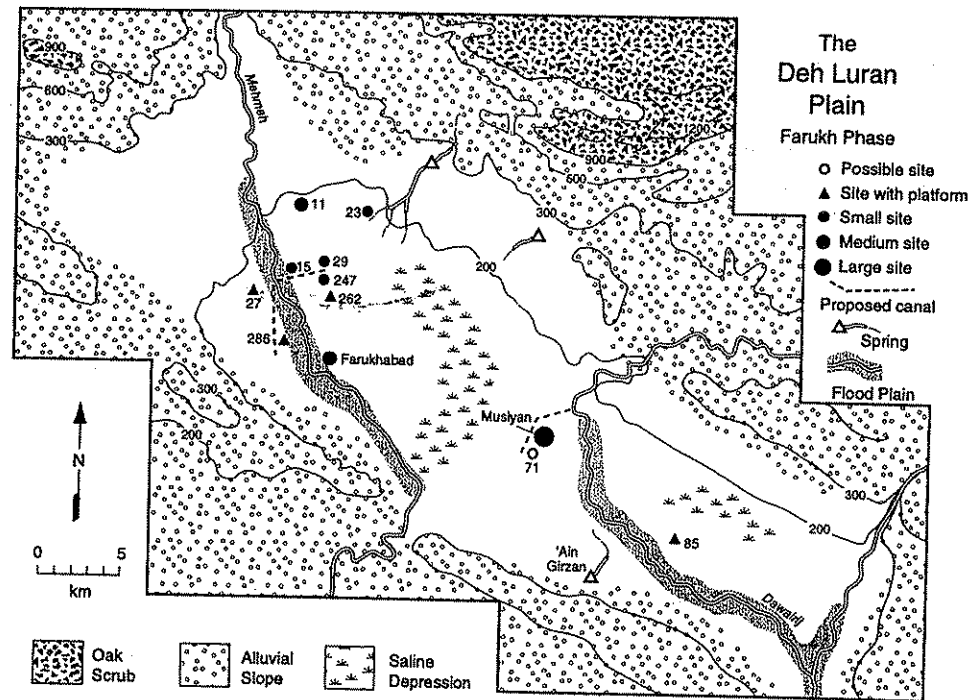


Fig. 2. Map of the Deh Luran Plain and settlements of the Farukh Phase.

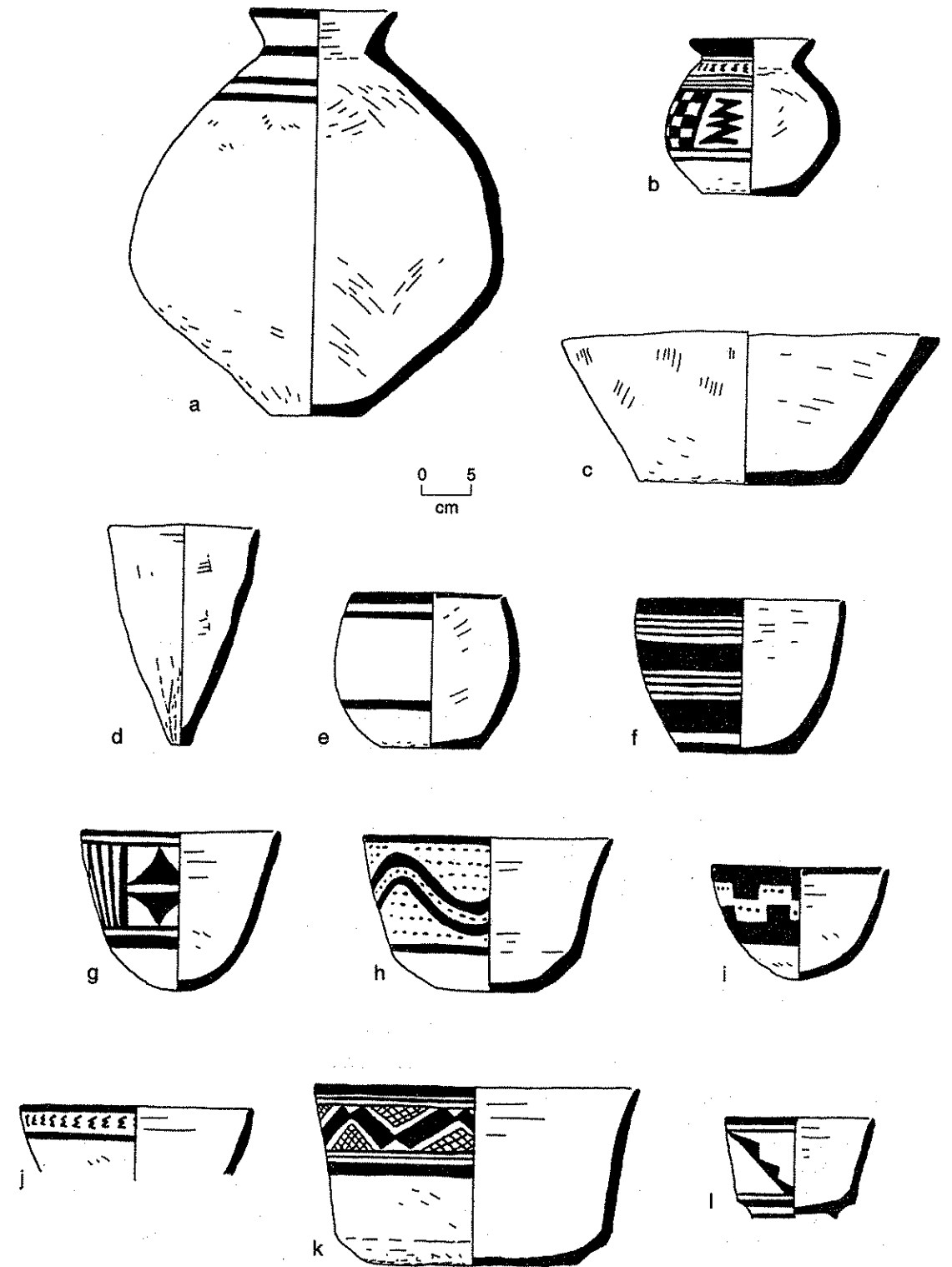


Fig. 3. Characteristic ceramic vessels of the Farukh Phase.